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EDITED BY

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THE PRACTITIONER.

JULY, 1875.

Original Communications.

ON THE PATHOLOGY AND TREATMENT OF CHOLERA.

BY SURGEON A. R. HALL,

Army Medical Department.

Before beginning the subject proper of this paper it may be interesting to the readers of the *Practitioner* to have before them some details of the results obtained by the use of hydrate of chloral in cholera, and I therefore give the experience of Mr. Higginson, Civil Surgeon of Kheri, in Oudh, in his own words, as contained in letters to me:—

"Kheri, *Sept.* 19, 1873.

"I have lately had an opportunity of trying your chloral hydrate treatment of cholera, and am glad to tell you with complete success. On the 9th inst. cholera was reported to have broken out in a village called Chaoneh, only a mile distant from here; three deaths occurred before I got to the place, and none after. I had eight cases to treat. (Native names omitted). (1) aged 30 years; (2) aged 50 years; (3) aged 50 years; (4) aged 20 years; (5) aged 55 years; (6) aged 8 years; (7) aged 18 years; and (8) aged 40 years. Nos. 1 to 4 were attacked on the 9th, No. 5 on the 10th, Nos. 6 and 7 on the 12th, and No. 8 on the 15th. No. 1 is the widow of one of those who died, and Nos. 6 and 7 are the son and sister of another. The third person who died was the servant of a Brahmin. As the village is so close I was able to visit it twice a day, and so see for myself the effects of the treatment. *I used nothing but chloral hydrate, except quinine during convalescence.* Nos. 3, 4, and 6 were very bad cases; collapse well marked, sunken eyes and cheeks, low, husky voice, pulse imperceptible, suppression of urine for from twenty-four to thirty-six hours, burning sensation in abdomen. In Nos. 1, 2, and 8 the pulse was perceptible, but complete suppression of urine existing. No. 7 was attacked with vomiting while I was in the house attending the little boy. I immediately injected her, and made her keep perfectly quiet, and no further symptoms were developed. She was quite well the next day, and I have no doubt but that the prompt treatment was the cause of this happy result. I used a solution the same strength as you did, that is, ten grains dissolved in a hundred drops of water. My syringe holds twenty drops. Half an hour after injection the same expression was used by each patient as to the effects: "I feel more life in me;" the relaxed vessels were sending more blood to the surface. The injections were made in the arms, and beyond a slight hardness at points of punctures, and slight pain, there was no local evidence twelve hours afterwards of the injections having been made. I was most struck with the change in No. 4 twelve hours after I first saw him; his face had filled out again, and he looked another person. He had four grains at once injected, and four grains more an hour and a half after; passed urine ten hours after the first injection. No. 6, the little boy, was a bad case. I injected ten drops = one grain at 8 A.M.; repeated it in an hour. At 4.30 P.M. again injected ten drops, and repeated it an hour after; in all four grains. The following morning I found him fast asleep; he had passed urine during the night. Three days after he was up, and playing about as usual. No 2 was the mildest developed case; I only injected twenty drops = two grains, once in her; this was in the evening; the next morning she was sitting up out of bed. With the exception of No. 7, each one of these persons was more or less in collapse when I saw them, and considering the difficulties one has to contend with when treating sick people in a *native village,* I think the results are wonderful. All these people are exceedingly poor, and I had to provide some of them with a little money to buy such nourishment as was to be had, and scanty enough it was; their convalescence was of course delayed. I of course enforced stringent sanitary measures as soon as I got to the village, and this will account for the small number of cases. Fifteen years ago they say this same village was decimated by cholera, and they had it to a less extent six years ago. The relaxation of the arteries by the sedative action of the chloral was amply proved by the altered appearance of the patients within twelve hours, their faces filling out, as it were, the eyes losing the sunken look, and the pulse reappearing at the wrist."

"KHERI, *Sept.* 21.

"Since I wrote to you there have been two more cases in the village Chaoneh; one, a woman, died *an hour* after she was attacked, and before I had time to get out; the other a boy, aged seven, living in the same house, I found in collapse; duration of attack 4½ hours; pulse at wrist imperceptible, eyes sunken, voice low and husky, great restlessness, &c. I at once injected ten drops of the solution in each arm; half an hour after I could feel the pulse at the wrist, and the boy looked and felt better. I left a native doctor in charge of him, and the next morning when I visited the village he was sound asleep, had passed urine during the night, had three loose motions since time of injection; he is now quite well again. This makes nine cases seen and treated by me, and *no deaths.*"

"KHERI, *Sept.* 23.

"I have some more successful cases to tell you of—one of such a nature as to remove any doubt from my mind of the value of the treatment. On Sunday, after I had posted my letter to you, I got a report that there was a fresh case at Chaoneh, a woman. I saw her four hours after she was attacked, and found her in severe collapse. Judging from my experience of other remedies, I thought it was no go this time, and that she must die. She had had about twenty motions in the first two hours, and then they ceased; pulse imperceptible at wrist, severe cramps, great restlessness, complaining greatly of abdominal pain, voice very faint, and breath really icy cold—altogether the worst case yet. I injected twenty drops in the left arm once, and in the right arm twice = 6 grains; half an hour after, twenty drops in left arm; an hour and a half after first injection, injected twenty drops into each thigh; these latter had a magical effect over the pains in the legs, which had been very distressing. Shortly after this, about two hours after the first injection, I could feel the pulse again at the wrist; the woman lay on her side, and began to doze. I saw her again in the evening; pulse distinct at wrist, and pain ceased; injected twenty drops in right arm; this made fourteen grains altogether, the largest quantity I have used yet in any one case. Yesterday, at morning visit, she was much improved in appearance, had slept during the night, passed four watery motions, no urine; evening visit, pulse good and strong, no urine yet. To-day, morning visit, *passed urine twice during the night*, weak, otherwise well. I look upon this case as a triumph; nothing could have been worse than her condition when I first saw her.

"On Sunday night a girl aged eight years was attacked, and died within four hours, before I had time to get to the village. Since then I have stationed a native doctor at the place. There have been five fatal cases now, none of which I had an opportunity of treating. Yesterday there were three fresh cases, but the native doctor being on the spot, injected them at once, and when I saw them in the evening choleraic symptoms had passed off, and to-day they are quite well. There has been no preliminary diarrhœa in any of these cases; they were all attacked immediately with the characteristic motions and vomits. It is quite reasonable to say that the three cases yesterday would have gone on to collapse had they not been taken in time, so that I have had thirteen cases now, and *all cures*."

"KHERI, *Sept*, 26.

"I'm sorry to say I have an unsuccessful case to tell you of, but I think the result was mainly due to the stupidity of the native doctor left in charge. The particulars are as follows:—The woman was attacked about three o'clock in the morning; she was seen shortly after by the native doctor stationed at the village, who injected twenty drops of the solution twice in the left arm and once in the right. I saw her at 6.30; she was then in intense collapse. I injected twenty drops into each thigh; quarter-hour after, twenty drops in right arm; half-hour after this, twenty drops in each arm. At eight o'clock I could feel the pulse at the wrist once more, and there were evident signs of reaction; I then had to return home to my other work, and instructed the native doctor to inject again if the pulse did not improve in an hour. The fellow says that up to nine o'clock the woman went on well; she then got a little worse, but as she had already had eight injections, he was *afraid* to inject more than ten drops in each arm, and after that did nothing more. The woman died at one o'clock.

"I regret extremely that I was not able to remain in the village, but it was simply impossible; however, one death only in seventeen cases [1] is still unexampled; and my belief in the treatment is not shaken one whit. I really think if I could have stayed the woman would not have died, after my success with the case I told you of in my last letter. It looks bad, though, for the success of the treatment in the hands of native doctors."

[The following paper was read before the Royal Medical and Chirurgical Society, Oct. 13, 1874.]

The encouraging success that has attended the treatment of the cold stage of cholera by the hypodermic injection of chloral hydrate in the cases in which it has been tried, induces me to bring the subject before the notice of the medical profession in England. The fact that the Government of India attach so much importance to the matter as to have published letters from Mr. Higginson, the Civil Surgeon of Kheri, in Oudh, and myself, concerning it, in their official Gazette of Feb. 14, 1874, is also very satisfactory. These reports were published in a letter in the *Times* of August 15, 1874.

During a continuous service of upwards of eleven years in Bengal, I have seen a good deal of cholera. I have suffered from it myself; and I think it may be of interest to describe, as tending to throw some light on the pathology of the disease, what particularly struck me in my own symptoms, and the conclusions I have drawn from them and from the writings of various authors.

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[1] Details of the last two cases mentioned in the *Gazette of India* were not sent to me by Mr. Higginson.

While doing duty with troops who were suffering from an epidemic, in April 1864, I had a severe attack. The first thing that I specially noticed was the entire absence of all griping, colic, or straining, while the purging was going on. The stools seemed to be expelled by the contraction of all the muscular fibres of the intestines themselves, without any assistance from the abdominal muscles. I noticed that my pulse was hard and then small before it ceased to be felt at the wrist. But what struck me as curious was the fact that my heart was beating forcibly all the time! The absence of pulse therefore did not seem to me to be caused by exhaustion of the heart's power, or a tendency to syncope.

The cramps in my arms and legs were very torturing. There was total suppression of urine for about twenty-four hours. My voice at first was rather shrill and *squeaky* before it became what is called *sepulchral.* The rice-water evacuations were ejected at frequent intervals, and the vomiting was almost incessant. I craved for liquids, and drank cold water and soda-water for a time, only to expel them with a spasmodic rush. I did not experience any *nausea;* when the fluid reached the stomach it seemed to be expelled by the rapid contraction of the muscular coats of that organ. I am thankful to say no stimulants were given to me, and I lived through the attack. I retained my consciousness the whole time, and recovered without much secondary fever.

After this experience I naturally took more interest than ever in studying the disease. The writings of Dr. Brown-Séquard seemed to me to lead to the conclusion that *irritation* of the vaso-motor portions of the sympathetic nervous system would account for many, if not all, the symptoms of the collapse of cholera. When I read Dr. George Johnson's "Notes on Cholera," I felt convinced that the *asphyxia* produced by the contraction of the pulmonary arterioles was apparently the chief condition to be overcome.

Without indulging here in speculations as to what *causes* cholera, I think I may say that the comparative rapidity with which persons who survive an attack generally regain their health, tends to prove that no serious *permanent* changes have taken place, either in the blood or the intestinal canal. When oxygen can gain free access to the blood, and water is supplied in sufficient quantity, the blood seems to be able to perform all its functions properly. Dr. Parkes, years ago, denied that the turbidity of the rice-water evacuations was occasioned entirely by the presence of epithelium, and the recent investigations of Drs. Lewis and Cunningham, in Calcutta, confirm the denial.

We have then, apparently, to deal with some morbid influence which acts with fearful violence for a time. It often kills rapidly, but if the patient does not succumb, he gets well pretty quickly. The question is—What state is he actually in, and what can be done to keep him alive?

In May 1869 I wrote a paper, entitled "Thoughts about Cholera," which was published in the *Indian Annals of Medical Science* for March 1870. Some months previously, a number of printed questions had been circulated, to be answered by various medical officers in Bengal, in order that the different opinions held on the subject might be recorded. One of the questions was:—Does collapse depend upon paralysis of the sympathetic nerve? To this I wrote "No." Dr. Brown-Séquard sums up the results of his well-known experiments by asserting that the parts supplied by the sympathetic, when that nerve is *divided* (or *paralysed*), show: (1) Dilatation of blood-vessels; (2) Afflux of blood; and (3) Increase of vital properties; while galvanisation of the nerve is followed by (1) Contraction of blood-vessels; (2) Diminution of blood; and (3) Decrease of vital properties. It seemed to me therefore to be more probable that the sympathetic nerve is in an *irritated* state, rather than paralysed.

I think that the different symptoms of the collapse of cholera lead to the conclusion that the morbid influence (whatever it may be) exercises a stimulating action on the vaso-motor portion of the sympathetic nervous system, producing increased heart action, contraction of the muscular walls of the arteries, and, at first, augmented blood-pressure. The increase of arterial tension is first shown by a hard pulse. This afterwards becomes small, because there is very little blood in the artery. I am sorry that I have not been able to obtain sphygmographic tracings of the pulse as yet. Dr. Parkes has pointed out the frequency of copious micturition of limpid urine at this early period. This flow has been shown by Traube to be intimately related to high arterial pressure; but when the state of muscular activity passes on into cramp-like spasm, there is total suppression of urine. This is probably due to complete closure of the renal arterioles.

A sensation of burning heat at the epigastrium is often experienced in collapse. This may be due to a hyperæmic condition of the solar plexus. The condition of irritability of the sympathetic produces, through its vaso-motor nerves, spasm of the muscular coats of *all* the arteries of the body. *The heart contracts forcibly, but cannot dilate normally, its muscular walls being spasmodically affected.* This is a point that I wish to bring prominently forward. I believe that the irritation and hyperactivity of the vaso-motor portion of the sympathetic is so great that the *inhibitory* or dilating action of the vagus on the heart is not able to control it.

Dr. Aitken, noticing the appearance of the heart after death, as observed by Dr. Parkes, writes:—"The right side of the heart and the pulmonary arteries were generally filled, and in some cases distended with blood; the left side and aorta were generally empty, or contained only a very small quantity of dark blood; the left side evidently had received little or no blood, but had continued to contract, in some cases even violently, on the last drop of blood which had entered it." I fancy that both sides of the heart are influenced in the same way by the same causes, and contract violently. The left heart gets very little blood sent over to it by the right heart, in consequence of the contracted pulmonary arterioles, and is therefore comparatively empty; though, while life lasts, it must get *some* blood. The right heart gets a considerable quantity forced into it by the gorged vena cava and other systemic veins, but cannot send it into the lungs, also because of the contracted pulmonary arterioles. It is therefore full of blood, and is found so after death.

We have then, I presume, the following conditions:—At first, increased blood-pressure, caused by the heart beating strongly, forcing the blood through contracted arteries. As the disease advances, the heart, though contracting forcibly, gets very little blood from the lungs, and therefore has only that little to send into the arteries. The systemic veins are gorged with blood, which occasions the *blue* colour of the face and surface of the body.

The peculiar choleraic voice is one of the first symptoms that attracts attention in this disease. One thing seems evident, that this peculiar voice does not depend on deficiency of air entering and leaving the lungs. If a cholera patient is desired to take a deep breath, he can generally do so. A considerable quantity of air is heard rushing into the thorax, and if one's hand is put to the mouth, the breath can be felt coming out pretty strongly, only very cold. I cannot help thinking that we must attempt to explain the existence of this voice by the effect produced on the larynx by the abnormal condition of the nerves which supply its muscles.

Violent cramps in the voluntary muscles are felt in most cases, which occasion the real pain in collapse. Dr. C. B. Radcliffe, in "The Dynamics of Nerve and Muscle," says that contraction of muscle is a temporary death. It is, in fact, an imperfect *rigor mortis,* which condition is seen so strongly marked in persons who die in collapse. The cramps in cholera may therefore be caused by the cutting off of the blood-supply to portions of the muscles by the contracted state of their arterioles.

The vomiting is apparently due to spasm of the coats of the stomach caused by the hyperactivity of its nerve-supply ; and the evacuations from the bowels may be the result of exudation from the distended venous radicles of the portal system, which partake of the general venous engorgement ; for Niemeyer has shown that when the arteries are contracted there is venous distension. I am aware that many facts have been observed which go to prove that the rice-water fluid is the result of *secretion* and not of transudation. The celebrated experiments of Moreau bear particularly on the point. Lately, in this country, Dr. Lauder Brunton has been carrying out a series of experiments on the nerves supplying the intestines, some of which he was kind enough to allow me to witness, and for which I take this opportunity of thanking him. But time will not permit me to go into this question here, and I beg, for the present, to leave it an open one. It is clinically interesting to know that the purging is not accompanied by any of that pain known to us as *colic.* The intestinal activity of cholera is absolutely painless. The *packed* condition of the intestines (in which they are seen drawn back to the spine, and occupying much less space than usual in the abdomen), described by Sir William Gull and Dr. Baly, is probably produced by great contraction of *all* the longitudinal as well as the circular fibres. *But I look upon the vomiting and purging as of secondary importance.* The worst cases, those of so-called *cholera sicca*, appear to die of *asphyxia* before much fluid can be thrown out by the stomach and intestines; for though rice-water fluid is found in the intestines in these cases after death, there is nothing like the quantity that is often expelled during life in other and less severe cases. According to my idea, the morbid influence is expending its force most fatally on the heart and lungs, through the vaso-motor centres, and to these our whole attention must be directed.

It is also a matter of clinical fact that in the worst cases there is absolute suppression of bile secretion and urine. These facts point to the spasmodic condition of the arterioles of the liver and kidney. The blood is shut off from the liver cells and Malpighian tufts. The gall-bladder, however, is usually found full, or half full, after death. The general condition of spasm of the involuntary muscular system has probably involved the circular fibres of the bile-duct, and so prevented the bile (which had been secreted since solid food was last taken, and before the state of spasm had set in) from being poured into the intestines.

The urinary bladder is generally contracted to the "size of a walnut," as has been remarked.

It has also been observed that abortions frequently occur in pregnant women when attacked by cholera, and that the fœtus has been often expelled *alive*, proving that the miscarriage was not caused by the death of the embryo. Of course, the contracted state of the mother's blood-vessels may cause the death of the child in time by stopping the utero-placental circulation; but I fancy that the uterus often contracts before this is brought about.

One of the chief peculiarities about this disease is, that while such fearful disturbance is going on in the body, the intellect is generally unaffected. If there was really a tendency to syncope, we should probably oftener see loss of consciousness.

I now beg to bring forward what I consider to be the right principle on which to treat collapse of cholera. Presuming the morbid state against which we have to contend to be one of asphyxia, caused by spasms of involuntary muscular fibres, due to a condition of hyperactivity of the sympathetic nervous system, the logical inference distinctly points to the exhibition of a remedy calculated to neutralise this condition. Such remedies are to be found in the class of agents which directly depress the activity of the muscular fibres of the circulatory apparatus.

In my paper above referred to, I pointed out that it is no good giving medicines by the mouth, as they are generally immediately rejected. I suggested the *hypodermic injection of pure sedatives,* which, if given in sufficient quantities, actually do produce syncope by their palsying action on the heart. When I wrote that paper chloral hydrate had only recently been discovered.

In India, medical men do not enjoy the same opportunities of getting the newest remedies and profiting by the latest discoveries as their more fortunate professional brethren in England. At that time I had never seen chloral hydrate, and did not know what its real therapeutic action was.

I enumerated the sedatives, as given in Dr. Headland's "Action of Medicines," which I thought might be useful, viz., tartar-emetic, ipecacuanha, digitalis, aconite, hydrocyanic acid, and some others. But tartar-emetic and ipecacuanha are too irritating to the *skin itself* for hypodermic injections, and digitalis has been proved by Dr. Milner Fothergill to be a direct cardiac stimulant. I procured Dr. Fothergill's essay in 1872, and Surgeon-Major Collis (of "The Buffs") and myself performed a number of experiments on bull-frogs (about 1½ lbs. in weight, and twelve inches in length) with digitalis and other drugs, which produce an effect on the circulation through the nervous system. We found that chloral hydrate caused the death of the frogs, with the heart in the most *complete diastole,* thereby proving that it is one of the most powerful vascular sedatives that we possess.

It so happened that I had not an opportunity of trying the hypodermic injection of a pure sedative till August 1873. I then had a soldier in collapse under my care. I dissolved ten grains of chloral hydrate in 100 minims of water, and injected this quantity under the skin of the arms, in four different places. The record of this case will be found in the *Indian Medical Gazette* for November 1873. Reaction was established in about five hours, and the patient made an excellent recovery, without any inconvenience from the punctures.

In September 1873 Mr. Higginson, the Civil Surgeon of Kheri, in Oudh, treated nineteen cases on this plan, and only two died (one of whom might probably have been saved if the native doctor left in charge had carried out his instructions.) The letters preceding this paper refer to seventeen of these cases. These results speak for themselves. Of course a great many more cases will be required to prove the efficacy of this treatment, but at all events it is a good beginning.

I attach great importance to the strength of the solution used; one part of chloral hydrate to ten of water. If it is stronger than this it will probably not be absorbed into the blood, and only cause ulceration, or perhaps sloughing. Mr. M'Reddie, the Civil Surgeon of Hurdui, in Oudh, reported unfavourably on the hypodermic method, in the *Indian Medical Gazette* for December 1872; but he dissolved twenty grains of chloral in sixty minims of water, which was much too strong.

I cannot here go into the subject of the secondary fever. I believe this to be a condition closely allied to heat apoplexy, and will only say that it would appear probable that the activity of the muscular walls of the blood-vessels is followed by a period of relaxation. This really is a partial paralysis, the result of exhaustion. In this dilated condition of the systemic arterioles, I have found quinine and a combination of stimulants and tonics to be the best treatment.

I hope now that I shall awaken sufficient interest in favour of the *sedative treatment of choleraic collapse.* When we hear sometimes of 80 per cent. of *those treated* dying, it is high time that some other plan than the usual stimulating one should be tried; and I believe that, practically, the subcutaneous injection of chloral hydrate is the best to adopt. All I ask for is a fair impartial trial. If this plan fails, it will share the fate of numerous predecessors: but if it really answers, and is proved to be a successful mode of treatment, it will not only save many lives, but will allay the sickening panic that spreads like lightning among a population when any of their number are stricken with malignant cholera, the greatest scourge of modern times.

GOA POWDER AND POH DI BAHIA IN THE TREATMENT OF ECZEMA MARGINATUM.

BY G. THIN, M.D.

The curative effects of a secret remedy, named Goa powder, in the parasitic diseases of the skin common in India, have been recently described by Dr. Fayrer; and Dr. Da Silva Lima has pointed out that this powder and another, named Poh di Bahia, are probably identical with the Araroba powder which is a popular and valuable remedy in Brazil for the same class of complaints.

I have lately had testimony presented to me that both Goa powder and Poh di Bahia are effectual in removing probably the most obstinate and inveterate parasitic skin disease which exists. The disease to which I refer is the Eczema marginatum of Hebra, and is known in England as Burmese or Chinese Ringworm.

The discovery by Köbner that the tricophyton tonsurans can be found in the epidermic scales which are scratched from the skin affected by this disease has led him and most other dermatologists to regard Eczema marginatum as a peculiar development of common ringworm, resulting from the conditions of heat and moisture present on the inner surface of the thigh where it is in contact with the scrotum—the part of the body in which it is most frequently found.

This idea has found a following in England. Hebra, however, while admitting the existence of the tricophyton tonsurans, still insists on an essential difference between the two diseases.

I can only account for the readiness with which Köbner's conclusions have been accepted by the rarity of the disease in

Europe, but assuredly these are but little in harmony with observations made in countries where it is common. A short statement of the most salient features of Eczema marginatum as seen in China will not only illustrate the importance of the virtues undoubtedly possessed by Goa powder and Poh di Bahia, but may, I believe, contribute facts of some value in deciding as to whether this disease is identical or not with Tinea circinata (Herpes tonsurans).

Whilst resident in Shanghai I had frequently occasion to treat common ringworm, and under the ordinary simple remedies the disease disappeared as readily as it does in England. I had also to treat a disease which I then (as I do now) considered a very different one, the disease graphically described by Hebra as Eczema marginatum, characterised by a hard, raised, infiltrated margin, most commonly curving downwards on the inner surface of the thigh, or backwards over the hips, but also occasionally found independently on other parts of the body. This disease, on whatever part it was found, was easily distinguished from ordinary ringworm by its objective characters, and the result of treatment showed that the distinction was based on a radical difference.

It often required months of treatment before the disease was subdued, and then the cure was only temporary; with the cessation of treatment there was, after a shorter or longer interval, almost invariably a fresh outbreak. In many cases the disease seemed practically ineradicable.

My fellow-practitioners, as far as I knew, had no better success; patients who went to England and were treated at home returned to China uncured. One of the most aggravated cases I have seen was that of a naval officer who consulted me in the Red Sea on his journey eastward after a two years' sojourn in England, during which time he had tried in vain a variety of applications in order to remove the disease, which had been contracted in China six years previously. Most patients eventually contented themselves by keeping their complaint in check by occasionally painting the surface with tincture of iodine. By this treatment it sometimes remained quiescent for months, after which it would unexpectedly reappear, generally on the part on which it was originally situated, but sometimes also on other parts.

Such are some of the features of this disease, between which and Tinea circinata practitioners in China have no hesitation in drawing a broad line. It is not a common disease in Europe. It is evidently oftener met with in Vienna than in England, if we except patients who have contracted it abroad.

The cases diagnosed in Vienna by Hebra as Eczema marginatum I could identify as being examples of the same disease with which I was familiar in China.

A worse case than any I have met with in China I had an opportunity of seeing at Hebra's *clinique.* This man had contracted the disease from wet packing-sheets at a hydropathic establishment in Austria, and although he had been under treatment by different dermatologists for several years, the malady had progressed from bad to worse. At the time I saw him, the margins of two circles, one on each side, extended upwards over the back, and, bending forwards under the axillæ, nearly met at the navel. In this case there had been the same resistance to antiparasitic treatment which I have already indicated as characteristic.

While ready to admit the value of Köbner's observations and experiments, I cannot, in the face of these striking clinical differences, believe that two diseases which need never be confounded, and where they are common never are confounded, are to be considered identical on the sole ground of the same parasite being found in both. The facility with which Köbner cured his patients by applications of solution of bichloride of mercury, oleum cadini, benzin, and the like, is irreconcilable with my experience of the disease.

After I had returned to Europe, my friend Dr. Henderson wrote me from Shanghai that a remedy for Eczema marginatum had been introduced there by a druggist, and that by its means the profession were at last able to cope with the disease. This remedy was Goa powder, and it soon became a popular and successful means of cure.

I have at present under my care a patient suffering from the disease, which he contracted in the East. He came to me in March of this year, and as the history of his ailments is not only interesting in connection with Goa powder and Poh di Bahia, but as showing what is the ordinary average course of the complaint, I have asked him to write me an account of his case. His notes are as follows :—

“ In 1863–64, when in Singapore and Hong Kong, I got China ringworm. I first noticed it on my left thigh. I paid no particular attention to it, and used to apply iodine, which never killed it, but I think prevented it from spreading. I fancy I have always had a slight piece of this patch remaining, and in different parts of the body. In 1870–72, when in Shanghai, the old patch on the thigh became as large as a crown-piece, and before long I should think it was 2½ inches in diameter. I then found I had another similar patch on my shin, and another round my navel (two inches), and another at the bottom of the spine (a crown-piece). Another on my left arm began to show shortly, and then a piece on my right. No one seemed to know how to cure it, but I recollected hearing of a powder that was to be got in Singapore, called Poh di Bahia, and which was used there as a certain cure. I procured half a dozen bottles, and gave some to one or two other ringworm martyrs. I applied it by mixing a little with vinegar and then rubbing it on the place. After about six applications, if the patient’s skin is tender, it gets very red and irritable, and little pieces of skin come off in time, and the ring remains a polished red. It took nearly all my ringworm away, and I thought no more about the one or two small patches left. In fact, as you will understand, it becomes irksome after a time, and there was no system in my applications, but I think I used to apply it at least a dozen times, and in some spots twenty, before the ring went away.

“ In about the beginning of 1873 I found my thigh patch had come back again—from the little spot uncured, no doubt. In the meantime there had been imported from Bombay some powder very similar to Poh di Bahia, called Goa powder. I tried this, and it cured me again. But, on coming home in April 1874, the barber shaved me on board ship, and I noticed about a fortnight afterwards a small reddish spot on my chin, which I attribute to infection conveyed by the razor, one instrument being used to shave the motley crowd formed amongst the passengers and crew of a P. and O. steamer. This grew rapidly, and in a month was as big as a sixpence. When I got home I found that there was also a patch about a crown in size on the middle of my back between the shoulder-blades; also a small patch on my right arm. I got some Goa powder in London, but I fancy it was very old. I had previously been using what I got in Shanghai with a good result, but this seemed to be less strong, as it did not irritate so much. However, I reduced the patch on my arm to about the size of a fourpenny-piece, and to a very pale pink colour, but the chin got worse, and the circle on the back did not go away."

When I saw him I found that the patch on the chin (which had now existed for ten months) consisted of a red raised surface about a line in breadth, which, in the form of the segment of a circle, passed from the centre of the lower lip where the mucous membrane becomes continuous with the skin, outwards to about half an inch from the inferior border of the lower jaw. The affected surface felt hard under the finger.

On the anterior surface of the middle third of the thigh there was a slightly elevated ring of thickened skin, forming a circle about two inches in diameter, the induration being more marked at some parts than at others. The colour was natural. The patch on the shoulder constituted a circle about three inches in diameter. It was not formed by a continuous ring, but by a number of slightly elevated indurated nodules. The colour of the skin was normal.

The patient had come to me confessedly because he could not procure the remedies in which he had confidence. I had been struck by the rapid and apparently successful results of the treatment applied by Hebra in the case to which I have already referred. This consisted in applying Wilkinson's scabies ointment, as modified by Hebra,[1] to the part, by rubbing it in vigorously with a hard brush twice daily; the treatment to be continued for a week, during which time the part was not to be washed.

I directed my patient to institute a similar treatment, but to discontinue the application to the skin as soon as the irritation produced became severe. He was able to continue it for the prescribed time on the back and thigh, and when I saw him a fortnight afterwards the induration and all signs of a ring had disappeared on these parts. The irritation produced on the chin had been so great that the treatment had to be intermitted several times, but at the end of a month nothing remained of the original red indurated surface, although the superficial irritation produced by the ointment had not altogether disappeared.

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[1] ℞ Flor. Sulph.; Ol. Fagi, *āā. unc. ser.;* Cretæ albæ, *unc. quatuor;* Sapon. viridis; Axung. *āā. libram.*

The feeling of tension and irritation of the skin produced by Hebra's treatment is so great that any less disagreeable method of cure is much to be desired. In Poh di Bahia this would seem to have been found. My patient prefers it to the Goa powder with which he was supplied in China, and considers it not only a less irritating but a more speedy remedy than that by which I have just succeeded in ridding him once more of his enemy, which, efficacious although it has undoubtedly been, he considers, in the light of his former experiences, to be in comparison but a *pis aller*.

A GOOD WAY TO DISTEND THE LOWER BOWEL IN INTUSSUSCEPTION.

BY DOUGLAS MORTON, M.D.

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HAVING no nearer approach to an inflating apparatus at hand than a Davidson's syringe, a few nights since, when it became evident I had a case of intussusception to deal with, I determined to distend the bowel with gas generated within. To this end, after putting my patient as deeply under the influence of chloroform as I could with safety, in order to get as complete relaxation as possible, I injected successively about a third (for the patient was a young infant) of each of a pair of Seidlitz powders dissolved in an ounce and a half of water. Believing the carbonate solution would be less irritant, I injected it first. Then, quickly after throwing in the acid, I pressed my left hand against the anus, using my right at the same time with a sort of kneading action over the colon, in which I thought the trouble lay, to forcibly distend the whole length of gut. After keeping this up a minute or two, I allowed the gas to escape. Under the influence of chloral and opium the child passed a comparatively comfortable night, and on the following morning passed natural-looking fæces ; and has had no trouble since.

This innovation upon the old Hippocratic method by inflation, I think presents advantages sufficiently obvious not to need comment, and is worthy of being made known to the profession.

A CONTRIBUTION TO THE CLINICAL HISTORY OF SCARLATINAL CONVALESCENCE.

BY F. A. MAHOMED, M.D., M.R.C.P.,

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The consideration of the large annual mortality from scarlatina and its sequelæ should, and indeed must necessarily, lead us to the most careful study of a disease whose ravages are so widespread and whose impression on the constitutions of its victims is frequently so indelible. Among that class of specific blood-poisons usually comprised in the term "fevers," to which we are liable in this country, there is none more to be feared, especially among the upper classes, than the disease in question. For while small-pox is under restraint and its severity universally mitigated by vaccination, typhus is confined to the extreme poor, and enteric is now universally admitted to be preventible, scarlet fever still retains its old features, and annually kills or maims its undiminished quota of victims.

It is not the object of this paper to discuss the disease itself in its first or acute stage, or to prove or even to suggest how far it may be prevented by attention to sanitary conditions and by perfect drainage; nevertheless one cannot but remark how frequently this disease is seen to precede, accompany, or follow enteric fever in the same household (a fact which, together with a certain clinical similitude, doubtless led Dr. Harley to the conclusion of their identity), and still more how frequently it is preceded by sore-throat, slight attacks of erysipelas, or general malaise, in a house or among a community in which it afterwards declares itself. These facts appear to indicate that the sewer frequently conveys the specific contagium; at the same time the evidence is very strong which proves that atmospheric influences are not the least among the factors of its existence. In connection with these matters, however, it appears certain that a vast amount of work remains to be done, which will not only go far to rid the community of another scourge, but also throw fresh light on our imperfect pathology of fevers. At present it may suffice to discuss some points connected with the convalescent state which may prove of interest to the physician if not of value to the patient.

For this purpose it will be unnecessary to distinguish between the various forms of scarlatina with which the sufferer may be afflicted; the history of the convalescence is the same in the broad outlines which it is here desired to indicate, whether the patient has escaped with the mildest possible form of the disease, with a rash hardly discoverable and a temperature never higher than 100°, or whether on the other hand he has suffered from its most malignant type, with delirium, vomiting, and suppressed rash that is compatible with recovery. It will be seen in the accompanying table that the disease during this period may be divided into several distinct stages, each of which has its characteristic symptoms, and during each a tendency to certain complications exists.

SYMPTOMS, &C.	FIRST WEEK.	SECOND WEEK.	THIRD WEEK.		FOURTH WEEK.
			FIRST HALF.	SECOND HALF.	
GENERAL CONDITION	Primary fever.	Defervescence.	Reaction.	Crisis.	Recovery.
TEMPERATURE	Rising.	Falling.	Low.	Invariable rise.	Normal.
PULSE . . .	Quick, full, & rather hard.	Quick & soft. Slow & soft	Quick & soft. Slow and soft.	Slow and hard. Normal.	Slow & hard. Normal
QUANTITY OF URINE .	Scanty.	Increasing.	Very copious.	Diminished.	Diminished. Normal.
QUANTITY OF UREA .	Rather increased.	More increasd.	Still increased	Diminished. Normal.	Diminished Normal.
QUANTITY OF URIC ACID .	Normal.	Increased from 10th to 14th days.	Diminishing.	Normal.	Normal.
ACTN. OF LIVER	Increased.	Increased.	Diminishing.	Torpid. Normal.	Torpid. Normal.
DESQUAMATION	None.	Commencing.	Increasing.	Profuse.	Profuse.
CONTAGION .	Little.	Increasing.	Great.	Very great.	Very great.
COMPLICATIONS	Intestinal, &c	Delirium, &c. Rheumatism.	None.	Albuminuria. Diarrhœa. Enlrg. glands	Albuminuria, &c.
TREATMENT .	Bed.	Bed.	Bed.	Bed.	Baths & get up.
DIET	Milk.	Milk.	Milk.	Milk.	Fish.

In a case of medium severity in which the characteristic symptoms have been well marked about the sixth or seventh day, when the temperature has passed its maximum and is beginning to fall, the following symptoms occasionally occur and form the most common complication between the seventh and fourteenth days. Although defervescence has commenced and convalescence is approaching, the patient is found sleepless and frequently becomes delirious, the delirium simulating in a marked degree that of delirium tremens. Suspicious, noisy, chattering, twitching, and haunted by delusions, he obtains no sleep, assumes a worn-out appearance, yet his temperature and pulse are both falling, and his condition need give rise to no anxiety: improvement will soon be gained by perseverance in the milk diet, and the exhibition of opium, or in some cases of chloral; occasionally, however, this condition of delirium becomes one of acute mania, and one instance of this which lately came under observation at the Fever Hospital terminated fatally. Though these symptoms are usually attributed to exhaustion, it is not easy to accept this view, for they most frequently occur in patients whose fever has not been severe, but rather of a mild type. Blood-poisoning would appear to more easily account for it, for there are many examples of delirium and sleeplessness arising from such a cause, as in typhus, erysipelas, alcoholism, gout, and many other conditions; moreover, Dr. Murchison has ascribed the "typhoid state" and its attendant delirium to uræmia, which he has attributed to excessive functional activity of the liver; a condition which will be noticed hereafter as occurring to a great extent in scarlet fever.

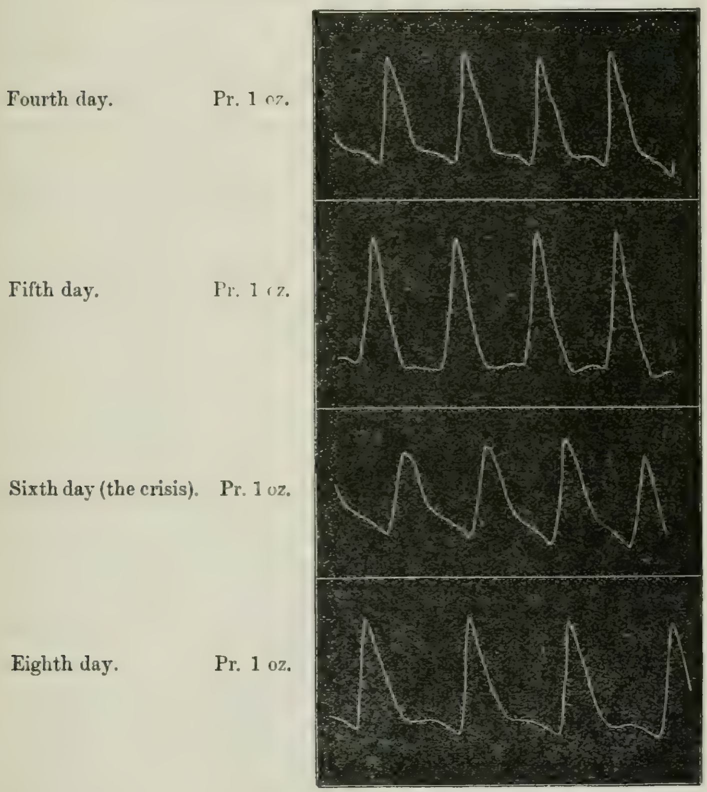
The latter part of this period, that is to say, from the tenth to the fourteenth days, is the time when these patients are most liable to rheumatism and to its attendant peri- and endo-carditis, and in connection with this it is interesting to notice the condition of the urine: this secretion passes through various well-marked alterations during the disease; during the first week of the fever the urine is scanty in quantity, loaded with lithates of high specific gravity, acid reaction, and sometimes contains a small quantity of albumen of venous (or febrile) origin. From the seventh to the fourteenth days the urine increases in quantity, loses its deposit of lithates and its albumen, has a highly acid reaction, and, on adding the nitric acid, by allowing it to trickle down the side of the test-tube and accumulate at the bottom, a heavy uric acid cloud appears; this appearance invariably occurs, and coincidently with it the rheumatism exists. Is it that the rheumatism and the uric acid in the urine are alike due to *derangement* of the function of the liver? or is it rather to excessive functional activity of that organ? It would appear that it is the latter condition which exists, and for the following reasons:—First, it is not very uncommon to find a slight amount of jaundice in the acute stage of the disease, accompanied by dark stools and indicating congestion of the liver. Secondly, there is an increased disintegration of albuminous material occurring in the liver during both this first and second stage, as evidenced by the great increase of urea and urates which is invariably found in the urine, the increase being greater during the second week. Thirdly, the pulse at this time is soft and not of high tension, as we shall afterwards find it become when albuminuria and decrease of urea in the urine, from functional derangement or inactivity of the liver, occurs; indicating that the increased production of urea and uric acid by the liver does not constitute a form of blood-poison which interferes with the capillary circulation, and produces albuminuria by increasing arterial tension: this observation derives further support from the rarity with which rheumatism and albuminuria are found coexistent in the same patient at the same time, both being apparently due to derangement of the liver, but this being of an opposite nature in each; when albuminuria does coexist with rheumatism, it is of the venous form, and takes its origin from another cause, namely, chill.

To return to the typical case supposed to be under observation. The temperature, which has been steadily falling during the second week, reaches its normal point, or perhaps not lower than 99°, on the fourteenth day; and during the third week, or at least during the first four or five days of it, remains nearly stationary.

Meanwhile the urine has increased very greatly in quantity, the patient sometimes passing as much as 2,500 c.c. (about 4½ pints) in the twenty-four hours; it has moreover lost its intensely acid reaction and become alkaline; it is of a pale greenish colour, of lower specific gravity, and has a disgusting and putrid smell. The urea excreted in the twenty-four hours continues excessive. Desquamation has become well marked and is proceeding rapidly. Discharges from the nose, ears, and mouth may be present, and will be referred to hereafter.

The pulse, to which it is particularly desired to call attention, is now especially of interest to the physician. Unlike its usual character in fever, the pulse in scarlet fever is *never dicrotic*, that is to say, not markedly so. Even in the worst cases during the first stage, the writer has never found the pulse hyperdicrotic; it is usually full and sharp, with a tendency to hardness and with a striking absence of dicrotism. The tracings reproduced in Fig. 1 are specimens presenting its usual characteristics during the acute stage, they were all obtained from the same patient on various days during a sharp attack of the fever.

Fig. 1.—*Tracings during the Acute Stage.*



During the second week in favourable cases its frequency becomes reduced and its character assumes that of the normal, soft, and full type. In some cases, however—and these require great care and close watching during their convalescence, they occur most frequently in children—the pulse, instead of becoming diminished in frequency at the end of the second week, continues rapid; the other symptoms may be apparently favourable, the temperature having fallen to 99° or even lower; the child, however, will frequently look pale, and not be very bright, and his stools are not unfrequently green and offensive. These indications are of the greatest value practically, for they foreshadow coming danger which may be guarded against by warmth, milk diet, and gentle purgatives. Constipation or chill would now produce the most disastrous consequences. If such a case as this go on in the usual way, it will be found that about the eighteenth to the twenty-second day his pulse will suddenly fall in frequency and become perhaps abnormally slow, often as low as 40 per minute, having previously been stationary at 110 or 120 for some days. The physician will probably hail this alteration with delight, and possibly report a great improvement to the friends; but his confidence will be misplaced if he relies on it as a sign of improvement, and he will be doomed to disappointment. The sudden fall in rapidity of the pulse at this crisis means sudden increase of arteria tension, and of this it is the surest sign; the pulse will be felt at the same time to become hard and full, the vessel remaining distended during diastole, the expansion being slow and sustained, and the artery assuming a whipcord or rigid character, so that it can be rolled under the finger. At the same time it may become somewhat irregular, a phenomenon which always occurs coincidently with a change of pressure in the arterial system. This condition requires no sphygmograph to detect it, although it was first recognised by its aid, but reveals itself to the educated touch of any careful observer.

If now the urine be examined, it will be found to be either albuminous or about to become so, the condition of pre-albuminuria existing. Before proceeding to describe this condition, it may be noted that this period of the disease, namely, from the eighteenth to the twenty-second day, is the time when albuminuria or some inflammatory lesion is most likely to occur. But even if the patient pass through this crisis in safety without any secondary complication declaring itself, the temperature will frequently be found to rise one or two degrees without any apparent cause. But if not so fortunate, it will sometimes rapidly rise in the course of a few hours, occasionally as high as 105°, while some glands in the neck equally suddenly become swollen and painful; this state of things will not unfrequently pass off in from twenty-four to forty-eight hours, in other cases they will remain enlarged for several days or even weeks, and yet in others they may go on to the formation of suppurating bubo; the latter condition, however, is more frequently of slow production, and a direct though tardy consequence of the primary inflammatory mischief. Instead of this glandular affection, the patient may suffer from an attack of ear-ache, attended with more or less fever, and relieved in the course of a day or so by the appearance of a discharge from the meatus; inflammation and discharge from the ear at this period of the disease appear to affect almost invariably the auditory canal, and to be of a harmless character, and not attended by permanent deafness; while, as in the case of suppurating glands, that inflammation of the ear which is attended by suppuration in the tympanic cavity, destruction of the ossicula auditus, and perforation of the membrana tympani, appears to originate in the first or acute stage by extension of inflammation from the throat along the Eustachian canal. To this class of sequelæ belongs the troublesome and offensive ozæna to which these cases are liable; it is invariably the remains of local mischief extending from the throat and originating during the primary fever: so also does the low febrile state, very closely resembling typhoid, which is occasionally present in this disease, accompanied by more or less diarrhœa and intestinal irritation; these symptoms are due to the intestinal affection and swelling of the solitary glands, which occur during the first stage of the fever. Allusion is made to these conditions merely to exclude them from the proper complications of scarlatinal convalescence, which alone it is proposed to discuss in this paper.

Before discussing the complications of inflamed cervical glands and otorrhœa, one word as to their cause. Why should scarlet fever be so frequently associated with these lesions? Why should the disease especially attack these parts? May it not be that the original disease has no connection with these affections? may not another cause be sought for their presence? Glandular inflammations, more especially in the cervical region, and otorrhœa, are most frequently found in connection with the strumous diathesis, and so far his own observation has impressed the writer most strongly with the belief that it is in strumous subjects that these affections are found as complications of scarlet fever; he regards them therefore as independent of any actual connection with the scarlatinal poison, but rather as due to the strumous taint which is now most apt to declare itself on account of the weakly state of the patient; the treatment which proves most effectual, moreover, is that employed for the latter condition. In the same manner the bronchitis and pneumonia often occurring at this period may perhaps be referred to a tubercular tendency, or be due to what is popularly termed "a weak chest," or, more scientifically, an unusually susceptible bronchial mucous membrane. The same reasoning does not account, however, for the albuminuria which is so frequent an accompaniment of this condition.

The writer has shown elsewhere (Trans. R. Med. Chi. Soc. 1874), in a paper on the etiology of Bright's disease, that the presence of a poison in the blood, such as scarlatina, erysipelas, gout, lead, and many other conditions, or imperfect assimilation of food, as in functional derangement of the liver or increased effete material in the blood, as in pregnancy, all give a tendency to albuminuria by altering the relation between blood and tissue, and producing high tension in the arterial system; in all of these conditions the excretory system is overtaxed, and if either the skin or the bowels are prevented performing their excretory function by either chill or constipation, the condition is intensified, increased work is thrown on the kidneys, and albuminuria is produced. To these predisposing conditions may be added two others which have also been mentioned as causes of albuminuria: the one, damage to a large portion of cutaneous surface, as from a burn or acute eczema, a cause which is present to an extreme degree in scarlatina; the other, *cold* to the surface, a cause which very readily operates on scarlatinal patients on account of the delicate condition of their new skin. We have then in scarlatinal convalescents four important conditions, each or all of which may produce albuminuria. First, a derangement of the liver; second, destruction of cutaneous surface; third, a tendency to chill; fourth, the presence of a specific blood-poison.

It is impossible in a paper of this description to enter fully into a discussion of the forms and causes of albuminuria following scarlet fever; a short reference to each may, however, be attempted. They are presented here in a tabular form, and the actual cause of the albuminuria, the condition of urine, the state of arterial tension, and their etiology also indicated.

ALBUMINURIA.

FORM.	CAUSE.	COND. OF URINE.	ARTERIAL TENSION.	ETIOLOGY.
ARTERIAL .	Transudation from Malpighian tufts.	Quantity diminished. Paraglobuline. Albumen, blood.	Always high.	Blood-poisons. Constipation.
VENOUS . .	Transudation from tubular plexus.	Quantity normal. Albumen. No paraglobuline or blood.	*May be low.* Usually high.	Chill. Intense fever. Heart or pulmonary disease, &c.
ARTERIO-VENOUS .	Transudation from dilatation of capillary vessels.	Quantity increasing. Albumen. Often blood.	Diminishing towards recovery.	Chronic condition of either preceding causes.

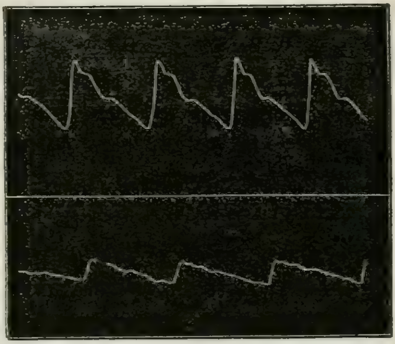
Albuminuria may be regarded as the symptom of certain conditions which, if allowed to continue, would produce disease of the kidney and other excretory organs, but the disease does not in the first instance arise in those organs. Before describing these conditions it will be as well first to explain two indications that will frequently be referred to. The sphygmographic signs of high tension are as follows: A sharp point at the apex of the tracing, representing an increase in the percussion element of the pulse; a prolonged sustension of the tidal wave, indicating a prolonged and laboured systole of the heart; a slow collapse of the artery, and the ability of the pulse to overcome considerable pressure, as shown by its power to raise the lever of the sphygmograph when a pressure much greater than usual is employed.

Under certain conditions the writer has shown that a constituent of the blood may be present in the urine when no albumen or any other abnormal element can be detected; no reaction being obtainable with the nitric acid test when most delicately applied, no blood-cells can be discovered by the microscope; no colouring matter of the blood can be seen by the eye or detected by the spectroscope; its presence is invariably associated with high tension in the pulse; it usually precedes, accompanies, or persists after arterial albuminuria; it is detected by the use of the guaiacum test for blood, which is employed as follows: a few drops of urine are placed in a small test-tube, a drop of tincture of guaiacum is added, and then a few drops of ozonic ether; after agitation the ether rises to the top, and if the abnormal element which is believed to be *paraglobuline* be present, a blue colour is produced, which is extracted from the mixture by the ether, and forms a brilliant blue upper stratum.

By the assistance of these indications we are able to classify albuminuria into three distinct forms, which have the following clinical histories :—

The mildest form of arterial albuminuria will be found to occur almost without any constitutional symptoms about the end of the third week. Most frequently the patient may have been a little constipated (one day passed without an action of the bowels is usually sufficient to produce it), and it will be found that his pulse is harder than normal; if a tracing be taken, well-marked signs of high tension will be found; he will have slight subconjunctival œdema, the first sound of the heart will be a little prolonged and perhaps reduplicated—a symptom pointed out by Dr. Sibson as indicating high arterial tension in chronic Bright's disease. On examining the urine, a blue reaction more or less intense will be obtained with the guaiacum test; no albumen may be present if the case is taken sufficiently early, but on the following day it will appear; if the urine has been measured and the quantitative analysis for urea be performed throughout the illness, both will now be found somewhat decreased. Beyond these symptoms, however, there will be none; the patient will express himself as feeling quite well, and there will be neither nausea, vomiting, headache, pain in the loins, nor increase of temperature. A sharp purgative administered in this stage will almost invariably remove all the symptoms; the paraglobuline, the albumen, and the high tension will all disappear in a few hours.

FIG. 2.—*Effect of Purgation on Albuminuria.*



Bowels confined.
Albuminuria.
Nov. 27, 1873.
Pr. 2 oz.

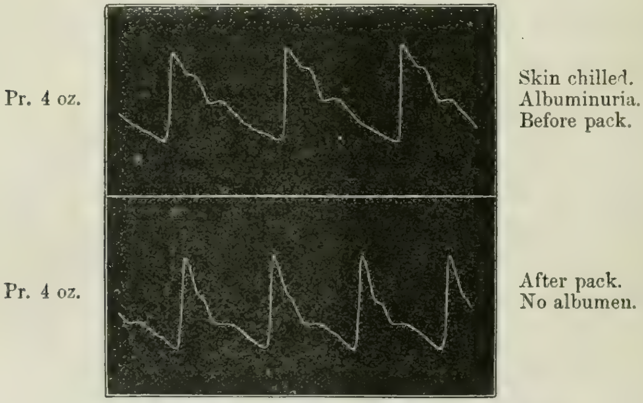
Bowels purged.
No albumen.
Nov. 29, 1873.
Pr. 3 oz.

This, however, is a sketch of the most favourable form; a form which is due almost entirely to constipation, and can be easily overcome. The first cases observed by the writer were all of this mild nature, and they gave the impression that albuminuria could be checked immediately if taken early enough but during the present epidemic it was soon found necessary to modify this opinion. The variability of the disease at different periods and during different epidemics has always been a matter of common remark. The albuminuria which now prevailed was of a much more severe type, but it nevertheless proved amenable to treatment, and out of a large number of cases observed at the Fever Hospital, not a single death occurred; all except one, who was a gouty subject and a hard-drinker, entirely recovered before leaving the hospital, and only one went on to dropsy, and this only existed for two or three days.

This more severe form appears to be due to a larger dose of poison; constipation has little or nothing to do with its production, the bowels being often relaxed at the time of the attack. Such cases partake more of an "inflammatory" nature, and begin with rigors, a rise of temperature up to 102° or higher, and the urine becomes distinctly bloody almost on the first day, and is greatly reduced in quantity; these patients frequently have vomiting and not seldom diarrhœa; they look puffy in the face, and have a good deal of constitutional disturbance; in fact, they all have the well-known symptoms of acute nephritis; the urine will frequently continue bloody for several weeks, and at the same time more or less scanty; the secretion gradually increasing in quantity and arterial tension coincidently diminishing as the condition improves. With milk diet, sweating in hot packs, purgatives, and flannel next the skin, they all recover sooner or later. These cases, like the others, all exhibit high arterial tension from the commencement, and the desired object is to reduce it.

Venous albuminuria also occurs at this period; it is due to a chill of the skin: this occasionally might be the exciting cause of the inflammatory form just mentioned, but such cases come under the head of arterial albuminuria. More frequently chill or exposure to cold gives rise to a much milder form, undistinguishable from the first set of cases, except that while the urine may be highly albuminous, it never gives any reaction with the guaiacum test or contains blood in any form. The tension of

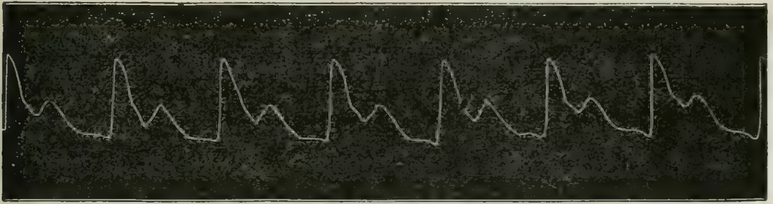
Fig. 3.—*Effect of hot pack on Albuminuria.*



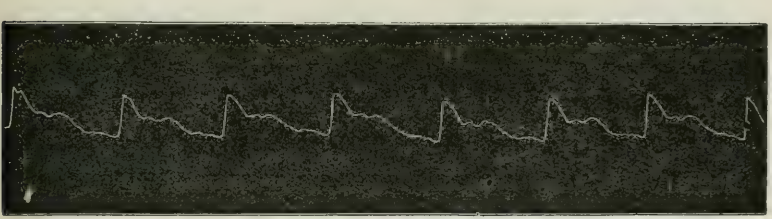
Tracings obtained within two hours of each other.

the pulse is increased, but not so markedly so, and sometimes not at all; no complaint is made of any constitutional symptoms. Such cases as these are frequently curable, if detected at their commencement, in an hour or so by the hot pack; the urine passed immediately before the patient is placed in the pack being albuminous, while immediately afterwards it is normal; the arterial tension at the same time being rapidly reduced. Other cases, again, are of longer duration, especially if the condition has become well established before treatment is commenced. So susceptible are scarlatinal convalescents to chill, that two cases came under the observation of the writer in which albuminous urine was secreted immediately the patients left their beds, the secretion becoming normal as soon as they returned to them, the change being instantaneous; the experiment could be repeated several times in one day. In these cases the pulse-tension was hardly perceptibly increased, and no reaction with the guaiacum test could ever be obtained with their urine.

FIG. 4.—*Effect of Bathing on the Pulse.*



Before Bath. Urine normal.



After Bath. Urine albuminous.

Exactly similar results have been obtained from observations made on the effect of cold bathing in the healthy subject. In these cases temporary albuminuria resulted after ten or fifteen minutes' immersion, although actively engaged in swimming;

a similar result to those previously reported by Dr. Johnson. The urine in these cases gave no reaction with the guaiacum test, and the arterial tension was not increased; the arteries becoming contracted, the pulse smaller and varying with respiration, showing congestion of the right heart; the veins were turgid, albuminuria evidently resulting from transudation from the venous capillaries; slight cough and increased bronchial secretion indicated also slight temporary congestion of the lungs.

The same characteristics occur in the pulse and urine when albuminuria occurs in the course of a severe fever, or as secondary to heart-disease or bronchitis; in these cases it is undoubtedly due to venous congestion; blood only appears in the urine in very severe examples of these conditions, and then owing to rupture of venous capillaries from pressure.

The last form has been designated *arterio-venous albuminuria.* It is not due to any active congestion, but to chronic dilatation of the renal capillaries after acute congestion, from their inability to recover their normal tone, thus permitting a prolonged drain of albumen from them; blood may or may not be present. The cause may have been removed, and the arterial tension having been gradually reduced may have become normal, the urine being increased in quantity and being sometimes excessive, although albumen is still present.

There is a peculiar characteristic of the urine which frequently occurs in connection with this state; it is found after the disappearance of chronic albuminuria, where the patient is anæmic, or in other cases in which anæmia has occurred after scarlet fever, but without albumen being present in the urine, although the patient looks "puffy," and from his general condition albuminuria would be suspected. In these conditions, after adding nitric acid as before described to form a lower stratum in the test-tube, a violet or purple ring is found almost immediately above the acid. If to a specimen of this urine an equal quantity of strong hydrochloric acid be added, the whole agitated and allowed to stand for some hours, a deep blue colour is produced with a deposit of indican. This symptom is frequently found in idiopathic anæmia, peritonitis, and other conditions attended by anæmia and exhaustions. It has also been described as resulting from diseases of the spinal cord. It has been stated to be due to disintegration of blood-corpuscles, but its pathological significance has not yet been definitely determined.

These cases of chronic albuminuria frequently derive benefit from digitalis; possibly ergot might be effectual (the writer has no experience of its use, though from its physiological action it would appear to be indicated); tonics and change of air have so far proved the most reliable, attention to the bowels and flannel next the skin being indispensable.

Such, then, is a rapid enumeration of the most frequent complications of the convalescence from scarlet fever. Although the end of the third week has been mentioned as the time when they most frequently occur, still the rule has many exceptions, and they occasionally occur earlier, but more frequently later in the disease. The latest period I have known albuminuria to occur for the *first* time was in the seventh week.

There is a phenomenon of scarlet fever which does not appear to be described in the ordinary literature of the disease, but which occurs not unfrequently to some extent, namely, a relapse of the primary fever. A partial relapse, taking the form of a fresh inflammation about the fauces, with swelling of the tonsils, headache, and fever, often occurs about the end of the second week, or perhaps a little later. This might not be regarded as in any way a relapse or recurrence of the primary fever, were it not for the fact that occasionally more well-marked examples occur. Twice the writer has seen an unmistakable scarlet rash appear, together with sore-throat, vomiting, and intense fever (in one case the temperature rose to 106°), in patients who, a fortnight previously, had passed through an undoubted attack of scarlet fever, and in whom, at the time of the second attack, desquamation had already commenced. Such cases are worthy of note, as their occurrence on some occasions might lead to the supposition of error in diagnosis on the part of another or of oneself.

Lastly, one other question suggests itself which is of the greatest importance both to the friends of the patient and to the public generally: At what time after an attack of scarlet fever may a patient be considered free from contagion, that is, unable to impart the disease to others? The experience of the writer would lead him to place it at three months. The time undoubtedly is uncertain and variable, but of these facts there can be no doubt: every patient is highly contagious at a month, nearly all remain more or less so at six weeks, many are still so at eight weeks; the longest period observed when a patient appeared to impart the disease to another was eleven weeks. Such cases must be examined with care, and many fallacies excluded; and some of these instances alluded to cannot stand the test of thorough investigation without some chance for fallacy being discovered. In one of the last observed, however, a child returned to her home after seven weeks' residence in the hospital, when desquamation appeared thoroughly complete; she had had very numerous carbolic baths; she did not take with her a single article of clothing she had worn in the hospital, and during her absence from home her twin sister and a baby (the whole of the family) had been perfectly free from any form of sickness; two days after her return her twin sister began to be peevish and irritable, six days after a rash appeared, and on the following day she was admitted with a sharp attack of scarlet fever. This case is only one of many, though few appeared to me to be so free from possible error.

One word more, on the management of scarlatinal convalescence, which appears not unfrequently to receive less attention than it deserves. The patients are allowed to leave their beds too soon, they are frequently ordered a highly nitrogenised diet, they are too soon left to take care of themselves, and often allowed too early to associate with their friends. Dr. Broadbent's wise rule at the Fever Hospital is to keep these patients three weeks in bed; the longer they are kept on milk diet the better, for the less excretory work their kidneys have to perform, the less the liability to albuminuria; they take numerous carbolic baths during their convalescence, and do not leave the hospital till desquamation appears to be complete, which is never less than six weeks, and often as long as eight or more. If in addition to these precautions a convalescent home for scarlatinal patients could be established in which they might spend their third month, it would probably prove highly beneficial both to the patients and those liable to come in contact with them.

ON THE TREATMENT OF A COMMON COLD.

BY J. MILNER FOTHERGILL, M.D.

There are few ailments more commonly put before us for treatment than an ordinary cold. Of course they are most frequent in winter, but nevertheless they occur at all seasons, even in the burning days of July. Whenever and wherever they are met, they are the consequences of a chill, either to the general surface or to a portion of it. Ordinarily the body temperature is maintained by the equilibrium existing betwixt the internal heat-producing area and the external heat-losing area—the surface—according to Rosenthal. When excessive heat-loss is not met by increased heat-production, a chill or lowering of the body temperature is the consequence; or if heat-production has been great, as in a ball-room, for instance, the cutaneous vessels are dilated, and if the surface be suddenly exposed to cold these dilated vessels are apt to be paralysed instead of incited to contract, and then heat is rapidly lost from the mass of warm blood in the cutaneous vessels. The catching cold, or the escape from doing so, depends upon the state of the vessels of the surface and their capacity to contract or the opposite. Consequently we can see that catching cold or escaping it under apparently identical circumstances depends upon a condition far removed from either vision or sensation. That the *modus operandi* of catching cold under these circumstances has afforded opportunity for difference of opinion, can be no matter for surprise. Rosenthal, however, has scientifically investigated the matter and unravelled the mystery. Where heat-loss is met by heat-production at the time, no unpleasant consequences result; but when the heat-regulating processes are delayed, the loss of heat and fall of temperature at the time are followed by an excessive heat-production, constituting a pyretic condition. This in its simplest form is recognised as a cold. Usually it is accompanied by some disturbance of the respiratory tract, either in the turbinated bones, known as nasal catarrh, as sore-throat, or as an attack of bronchitis. Of course these local inflammations may become very severe, and in bronchitis life is commonly threatened. There is at this point great vascularity of the internal heat-producing area, and a dry skin, whose heat-losing power is impaired from the loss of the aid of perspiration: for Leyden found that even the insensible perspiration is lost in increasing fever.

What are the indications furnished to us for the treatment of this state of matters? Obviously to restore the balance betwixt the two heat-producing and heat-losing areas; and in order to do so we resort to such measures as shall increase the amount of blood in the outer area, and so diminish the amount in the internal area; that is, to increase heat-loss and lessen heat-production.

The measures ordinarily resorted to for such ends are hot fluids, a warm bed, and often a dose of opium in some form. The result of such combination is the induction of perspiration, especially if the patient lie in bed next morning and have more hot fluids: for perspiration is most successfully induced from seven to nine in the morning. If the cold be caught at once by such measures the impending pyrexia may be averted, and the temperature equilibrium be maintained. More commonly, however, the case is more advanced when seen, and the pyrexia is clearly established. Under these circumstances the treatment will need to be more prolonged, and the restoration of the heat-balance will not be so readily attained. The condition of increased vascularity of the heat-producing area with arrested action of the skin is to be met by the administration of agents which possess the combined properties of lowering the heart's action and relaxing the vessels of the skin; or, in other words, which relax the two muscular ends of the circulation, the central and the peripheral. The impression so made produces a diminution in the blood-current and a dilatation of the vessels of the heat-losing area. As a consequence of this there is less blood in the internal area and less heat-production, with cutaneous vascularity and increased heat-loss. Rarely, however, is any impression made upon the pyrexia until the action of the skin is excited and the cooling effects of exhalation attained. The administration of nauseant diaphoretics to attain these ends has been the rule amidst practitioners and housewives. The time-honoured antimonial wine has scarcely yet yielded to its rival ipecacuan, nor, perhaps, is it desirable that it should. Their combination is good and to be recommended. In adults, iodide of potassium in guaiac mixture forms an excellent combination, especially when the cold is combined with rheumatic pains, or tonsillitis. These internal remedies may be aided in their action by external measures, such as warm baths. With children it is easy to wrap them up in a blanket wrung out of hot water, to enclose them so wrapped in a dry blanket, and to put them into bed. This may be repeated as required, and sufficiently aids the remedies given by the mouth. Measures for giving adults a warm bath in bed are now to be procured at little cost. After perspiration is once induced there is usually a gradual fall of temperature; but the normal may not be reached for some days. There is a decided tendency to excessive heat-loss after the action of the skin has been established, even though the temperature indoors be above the normal. Experience has taught humanity to wrap up well when passing through a cold, especially when it is breaking. Ere the action of the skin is re-established, the impression of external cold is grateful, but afterwards chills are readily experienced. The increase of blood in the heat-losing area permits of rapid heat-loss. When a cold is caught during the restorative period it is usually a fixed one, and not rarely serious illness is the consequence.

When the action of the skin is re-established, it not uncommonly happens that perspiration is profuse, even while the patients wrapt up well to shield themselves from heat-loss. This is a troublesome stage in the history of a cold. Here mineral acids with vegetable tonics are indicated, and perhaps best of all, dilute phosphoric acid in cascarilla or cinchona. In the treatment of influenza, vegetable acids along with a bitter tonic often produce a decidedly good effect. In addition to the general effect of the tonic, the arrest of the excessive activity of the sudoriparous glands is desirable. This stage is sometimes a prolonged one, and the maintenance of a pyretic condition by the rapid loss of heat and then increased heat-production is not an uncommon event. If this condition be pronounced, the best line of treatment is that of quinine with an astringent mineral acid. Quinine is well known to possess an apyretic action, probably to some extent by its effects upon the nerve-centres, and more, according to the observations of Binz, upon its checking the ozonising action of the blood. The effect of the astringent mineral acid upon the skin is to check secretion, and by these combined measures a satisfactory restoration to the ordinary state of health is induced.

In the treatment of the bronchial affections which so commonly accompany an ordinary cold, it is not a matter of indifference what expectorant remedy is selected. As long as the skin is dry and the bronchial lining membrane tumid and secretion arrested, ipecacuan with acetate of ammonia is indicated: or a little antimony may be added with advantage. When the skin is once thrown into action and the bronchial secretion also established, then acid with syrup of squills are suitable measures. But it is not a successful plan to administer squill with acids until the skin is moist. When there is a tendency to the free action of the skin, this latter combination in full doses is a useful plan of treatment. Neither is the union of carbonate of ammonia and senega in severe cases indicated until the secretion alike of the skin and the bronchial lining membrane is thoroughly established.

The treatment of a cold consists really in hastening and abbreviating the ordinary processes by which a rude disturbance of the temperature-balance of the body is recovered from. In order to do this a fair comprehension of the natural processes must exist, so that the remedial measures may harmonise with and not contradict these natural processes.

Reviews.

Cyclopædia of the Practice of Medicine. Edited by Dr. H. von Ziemssen. Vols. I. and II.: Acute Infectious Diseases. London: Sampson Low and Co.

We in England believe not only that we know better than they do in any other country how to cure diseases, but that we can describe them better. In a certain sense this claim is well founded, for the medical literature of no other country contains delineations of those aspects of disease that present themselves to the man who looks at it exclusively with a view to its treatment, which are at the same time so graphic and concise as those which are to be found in the writings of English physicians and surgeons.

In Germany, on the other hand, we are apt, rightly or wrongly, to suppose that disease is regarded not so much as an enemy to be struggled against by all the means which experience has taught us to regard as effectual for overcoming it, but rather as an interesting subject of scientific study—a pathological process of which the constituent and concomitant phenomena have to be weighed, measured, and compared with normal standards, and the results accurately recorded.

It is quite justifiable to call this naturalistic way of investigating disease unpractical, because it cannot be rightly employed in practice; for the primary duty of the practitioner is not to investigate, but to use knowledge already acquired by experience for the good of the patient. But with a view to the advancement of medicine, *i.e.*, to the increasing of the power which man possesses over disease, the systematic study of its origin and nature is everything. For this object, therefore, quite independently of its immediate application to therapeutics, it is as much our duty to do our utmost to promote the scientific investigation of disease as to possess ourselves of that practical knowledge, founded on our own experience and that of others, by which we are guided in its treatment.

We therefore regard it as an event of considerable importance in medical literature that a great work on clinical medicine, which professes to embody the results of German observations on the phenomena of disease, should appear in the English language.

Up the present time, English books on medicine have probably been better known to our German cousins than theirs to ourselves; for, on the one hand, there are few persons in this country who know German sufficiently well to read it with facility, and, on the other, it has been the practice for many years past to translate the best English works into German.

As our readers are no doubt aware, we owe the translation into English of this great Cyclopædia of German Clinical Medicine to the industry and zeal of American writers, all of whom, so far as can be judged from what has yet appeared, have accomplished their several tasks with great literary skill. Of the fifteen volumes of which the work will consist when complete, seven have been already published in German. Of the translation two have appeared, and it is announced that the others will be issued at regular intervals of three months, so that the work will be completed within three years of the present time. We are told in the "announcement" that the entire range of special pathology and therapeutics will be included, but that great pains will be taken not to give to any one subject more prominence than is due to it, so that while each subject is dealt with by a writer specially conversant with it, the unity of the whole will be preserved.

We further learn from the same document that in the preparation of the succeeding volumes several English writers, among whom may be mentioned Mr. Power and Dr. Buchanan Baxter, have undertaken to co-operate in the work of translation, and that Dr. Palmer, who is now in London, is anxious to enter into further arrangements of the same kind.

The two volumes now before us relate to the infective diseases. The names of most of the contributors are already familiar to English pathological students. The article on typhoid fever is by Prof. Liebermeister, of Basle, to whom, more than to anyone else, we are idebted for the reintroduction on the basis of exact clinical observation of the external application of cold in the treatment of pyrexia. The same author contributes a short prefatory essay on infective diseases in general, in which he sets forth in clear but cautious language those general views as to the nature of the infective process which he shares with most of his fellow workers. After giving a short historical account of the doctrines prevalent at various periods in the history of medicine, as to the etiology of epidemic and contagious diseases, he draws attention to that one doctrine which has survived all the fluctuations of medical opinion and now appear to be likely to be accepted as generally, by practical men, as it was before unanimously rejected.

"The prophecy which I believed myself justified in making in 1865, viz., that the theory of a *contagium vivum* would soon be the prevailing one, and that under its influence investigation would take directions that would probably lead to results of the greatest theoretical and practical importance—this prophecy has actually been fulfilled in part during the last few years. . . . . It is true that the triumph of the theory of a *contagium vivum* is in no way complete, and, as in former times, so now, it is not so much its opponents, as it is its imprudent adherents, who threaten to bring the theory into discredit. The utter lack of critical discernment and method which have characterised some of the works in this field, and, on the other hand, the recklessness with which facts of uncertain significance have been proclaimed certain proofs, have also in our time driven away many an earnest investigator. But there is good ground for the hope that such extravagances will not permanently influence its recognition, and that methodical investigation will continue to gain a mastery over the question, and that the weight of undeniable facts, which are exposed to light in increasing numbers daily, will finally overcome every obstacle."

We have quoted this passage at length for two reasons: first because, as regards doctrine, the writer, so to speak, strikes in it the keynote, of which the vibrations or those of its overtones are heard more or less distinctly throughout the whole work; and secondly, because it affords an excellent specimen of the style of the translation, and may serve to satisfy the reader that the translators have done their German into such readable English that he will often find it easy to forget that he has not an original production before him.

The article on typhus is by Prof. Lebert of Breslau, with whom many of us were personally acquainted some twenty years ago as M. Lebert of Paris. It is more than twenty years since he enunciated those microscopical fictions about cancer cells, typhus cells, tubercle cells, &c., which were for years taught in English schools of medicine as if they had been scientific truths founded on observation. It is long since the German professor repudiated the errors of his youth. He repeats the recantation in his etiological introduction to the three essays on relapsing fever, typhus, and cholera, but not quite so frankly as could be wished.

Neither in Lebert's essay on typhus nor in that of Liebermeister on typhoid will the reader find anything to be compared in scientific weight with our own original works on these diseases. Typhoid and typhus are pre-eminently English diseases, and have been treated by English physicians with a completeness which is not likely to be equalled even in Germany. But it is satisfactory to find that both writers have testified their appreciation of the laborious exactitude of Murchison and the convincing logic of Budd.

Relapsing fever has, of late years, become naturalised in Northern Germany, so that already the German literature of the subject is much richer than ours. In Breslau several very remarkable epidemics have come under the observation of Dr. Lebert, so that his treatise on this disease will be of exceptional value. The reader will find in it an admirable account of the author's recent experiences.

English pathologists will also be delighted to possess the elaborate treatise of Dr. Oertel on his own special subject, diphtheria. It contains not only the products of the author's own researches as to the pathology of the diphtheritic process, and particularly as to the relation between the local affection and the constitutional state, but a very complete account of all that has been accomplished during the last few years by other German observers. The purely clinical and therapeutical aspects of the subject are also treated with great completeness.

Space will not allow us to do more than mention the other subjects treated of in these volumes:—Cholera, by Prof. Lebert; plague, by Prof. Liebermeister; yellow fever, by Dr. Hänisch; dysentery, by Prof. Heubner; chicken-pox, measles, and scarlatina, by Prof. Thomas, of Leipsic; small-pox, by Dr. Curschmann; erysipelas, by Dr. Zuelzer; cerebro-spinal meningitis, by the editor, Prof. v. Ziemssen.

The merits of this admirable work are so unquestionable that we need have no hesitation in pointing out one or two defects. As regards style the translation is excellent, but it is to be regretted that more consideration was not given to the selection of suitable English equivalents of German scientific terms. For example, in the general title the expression "Infectious Diseases" is used as equivalent to Infections-Krankheiten. We need not point out that the English word "infectious" means "catching" (in German *ansteckend*), and therefore cannot be correctly applied, for example, to cholera. English pathologists use the word "infective" to designate those diseases which, to quote the definition with which Liebermeister begins his prefatory essay, "originate through the infection of the system with peculiar poisonous matter." The introduction of a wrong word into a work which is sure to have a large number of readers is always an evil, but in the present instance we may congratulate ourselves that it is not worse, for the authors might have chosen to use the still more objectionable word "zymotic."

Another point which requires notice is, that on some of the subjects the references to recent English literature are strangely defective. Thus, in the essay on cholera, no mention is made of the elaborate reports published during the last four or five years by the Indian Government; nor under the head of vaccination is any reference to be found to the vast fund of information contained in the Reports of the Medical Department of the Privy Council, or to the elaborate and exhaustive treatise on the subject by Mr. Simon. Perhaps however these conspicuous omissions rather afford evidence that scientific information ought not to be buried in Blue-books, than that German pathologists have failed to use due diligence in expiscating valuable material from the vast masses of waste-paper of similar external appearance by which it is concealed.

Health in India for British Women, and on the Prevention of Disease in Tropical Climates. By Dr. E. J. Tilt. 8vo. London: Churchill.

Dr. Tilt is so well known as an author and authority on women's diseases that it is hardly necessary to say that, as might have been anticipated, his book, though a small one of only 128 pages, contains much valuable and interesting information, and shows that, albeit the author has not had the opportunity of personally studying the subject in India, he has carefully availed himself of the labours of others who have had the advantage—or disadvantage—of such experience.

This, combined with his own large experience of the results of the effects of residence in a tropical climate, as manifested in those who return to Europe, entitle Dr. Tilt to speak with authority, and make the present volume a valuable, though small, supplement to the works on Indian and tropical disease quoted by him. The book contains six chapters, each of which deals with a subject of interest in a very practical and serviceable, though brief manner. After giving an outline of the country, its physical conditions, climate, seasons, respective peculiarities of different localities, and a few general remarks on the diseases of the natives, he proceeds to notice the effect of heat, cold, damp, malaria, of seasons and localities, on the European constitution, especially as regards the female sex. The important subject of infant life and nurture, the question of development in education of the European, and the possibility of colonising India, together with those concerning hygienic measures generally, and other important matters of social and political as well as medical interest, are ably discussed; the remarks on habits of life and means of preserving health as well as of preventing disease are worthy of careful reading.

Space does not admit of extended criticism of the details of this carefully written little volume. It will amply repay perusal, and as affording useful information to whose who are interested in the welfare of our countrywomen in the tropics, it should have a place in every medical library.

Clinic of the Month.

The Treatment of Gout in Surgery.—Sir James Paget, in the course of some clinical lectures delivered at St. Bartholomew's Hospital on the minor signs of gout, pointed out the importance of pain localised in the hands and feet, or special joints of them; of nodular swellings of such joints, and signs of inflammation in them; of contractions of the palmar fascia and its processes. In the treatment of these conditions, in the subacute stage, the joints should be treated with very gentle compression with wet linen and oiled silk, whilst for the relief of the swelling and induration left behind a moderately firm bandage should be used, so as to keep up steadily some amount of pressure on the joints for from two to five weeks after the attack. Apparatuses for extension of contracted fasciæ are rarely well borne, and the division of the tendons, though it has often been practised, almost always fails. Besides the above, other minor signs of gout are neuralgic pains, most commonly situated in the palate, tongue, and breast; hot burning patches in certain parts of the skin; numbness and tingling of a limb or of some portion of one; cramps and "catchings" in over-action. Amongst the affections of the urinary and genital organs are cystitis, orchitis, and prostatic hypertrophy and fibrous thickening or hardening of the penis, though these were not very distinctive features. Sir James also pointed out the relations existing between gout and various forms of disease of the skin, as psoriasis, eczema, urticaria, prurigo, pruritus, &c. These diseases present no special characters in gouty persons, but a knowledge of the existence of a gouty diathesis in their treatment is of much importance. The advice given to out-patients in such cases used to be that they were to take nothing strong, salt, sour, or sweet, which, with some limitations, is sufficiently accurate and good; for the ulcers of the integument which follow collections of urate of soda in the form of chalk stone, the best treatment is water dressing or solution of soda until the deposit is removed, and then, to promote the healing, the application of solution of nitrate of silver. Amongst the minor signs of gout, gouty affection of the digestive organs may be referred to. Amongst these are a peculiar fur upon the tongue, psoriasis of that organ, elongation of the uvula, and dyspepsia. Lastly, there are some affections of the vascular system, amongst which gouty phlebitis is conspicuous. In regard to the treatment of the gouty condition generally, it must vary with the constitution of the patient in whom it occurs. Colchicum, there can be no doubt, has a remarkable influence on all forms of complete gout, but it is less valuable in incomplete gout, and in those cases of irregular gout that are usually seen in surgical practice. The action of veratrium is more than doubtful. There are three things which have to be considered for all gouty patients. First, the drinking of a certain extra quantity of water, especially in the early morning; those who find an excess of lithates should take some alkaline water instead of plain water whilst dressing in the morning, such as the mineral waters of Vichy or Carlsbad. Secondly, since in gouty patients the skin usually acts inefficiently, recourse should be had to baths, warm in preference to cold, especially in elderly persons; and thirdly, great care and moderation should be exercised in regard to diet. Sir James is not satisfied that spirits are better than wine. The diet should not, at the same time, be too abstemious. (*British Med. Journal*, May 22 and 29, and June 5.)

The Treatment of Primary Disease of the Heart.—Dr. Fothergill, after describing various forms of primary disease of the heart, as aortic and mitral regurgitation, gives the following as the best preventive or palliative measures to be adopted. 1. That it is of the utmost importance in the treatment of primary disease of the heart to reduce to a minimum the calls upon that organ. Consequently, light labour alone must be attempted; and rest in bed is often very desirable at the commencement of a course of treatment as well as at intervals afterwards. 2. Much relief can frequently be afforded when dropsy is present by unloading the distended venous system. Brisk catharsis gives great relief, and does not depress the patient, as might be apprehended. 3. In all cases the heart must be acted upon directly by agents which increase the vigour of the ventricular contractions, of which digitalis is the chief. This agent may be given uninterruptedly for years without any so-called cumulative action, if the cases are properly selected. If given in improper cases unpleasant consequences may follow its administration. 4. It is also very desirable that the nutrition of the heart be maintained by good food and iron, in addition to the means mentioned above. Improvement in the general condition facilitates the action of the special remedies. (*Lancet*, May 29.)

Treatment of Headache from Intracranial Organic Disease.—In the course of a very sparklingly written clinical lecture on the treatment of headache from intracranial organic disease, Dr. Moxon points out the paucity of the literature of the subject in the recent larger works devoted to medicines, and then proceeds to say that all wise practitioners will keep in view two truths: first, that a headache occurring as a thing new and strange to the patient at any time of life needs to be considered with care, lest it be the onset of some acute illness; and secondly, a chronic headache requires good knowledge of the patient's habits of life, so that while endeavouring to bring the excretions into order by appropriate medicines, and with diet and exercise to regulate the daily life into conditions favourable for healthy nutrition, care should be taken that whatever avocation or indulgence is exercising a bad effect, is brought under restraint, directing change of scene, of pursuit, of amusement, according to necessity, and all this without meddling or prying. The recognition of the various kinds of headache obtains its significance only so far as the headache is part of a general condition. The patient is plethoric or dyspeptic, bilious, nervous, hysteric, exhausted, rheumatic, or gouty, and his headache is just that part of his ailment which most obtrudes itself to notice, serving as an introduction to and gauge of his plethora, &c., in accordance with which the treatment must be directed. The headache of organic disease in the cranium is a special type of great importance, and it is of great importance that they should be quickly discerned. Such headache occurring in any person in the earlier decades of adult age, it is imperative that large doses of iodide of potassium should at once be administered. In a large proportion of cases such treatment will save sense, mind, or life. In text-books it is commonly stated that the iodide should be given if the skin signs of syphilis be present, but Dr. Moxon maintains that many, nay most of the persons with organic brain-disease curable by iodide of potassium, not only deny syphilitic history, but show no trace of syphilitic disease of skin or bones. The occurrence of convulsions with the headache is alarming enough at any time, but when associated with the grave and unusual headache above alluded to, ought at once to lead to the iodide being given. Vomiting sometimes occurs in syphilis, and is not accompanied by the foul tongue, flatulence, and full abdomen found in primary gastric disorder. The dose of the iodide should be large. No one is ever hurt by iodide of potassium in doses of a drachm a day. If iodide do not cure, calomel, vapour baths, or immersion should be tried. A point to be noticed is that for the first two or three days of its use the patient sometimes may appear the worse for taking it. When the headache is intense, small doses of morphia may be injected, but it must be remembered that coma sometimes sets in suddenly. (*Lancet,* May 29.)

Varicocele and its Curative Operation by Subcutaneous Wire Loop.—Mr. Barwell, after describing the characters of varicocele, recommends the following plan of treatment:—First, it is most important that the vas deferens and spermatic artery be separated from the veins. This is best done by the surgeon standing on the patient's left (supposing the disease to be on that side), and taking that half of the scrotum about an inch above the testicle between the left finger and thumb, and feeling for the duct by rubbing the two surfaces of the bag gently together, whilst its walls glide from his grip. When he has thus brought the duct and artery from among the venous plexus, and holds them between his thumb and finger tip, he must let them slip away to the back, so as to separate them entirely from the veins. Supposing this separation accomplished, the bit of scrotum between the finger tips is to be squeezed rather tight, and a needle armed with iron or silver wire, not too fine, thrust straight through above them. The part may now be released from the grasp, and the needle passed in again at the puncture of exit in front of the veins, and out at the first place of entrance. Thus at one opening protrude the two ends of the wire, and at the other a loop; by drawing on the ends the loop is pulled into the scrotal cavity, and closely surrounds the varicocele. Each end is passed through a hole in a piece of wood, and drawn tight enough to make the veins below swell, bulge, and partly consolidate. Every other day, or every day, if time be an object, the wire may be tightened until it has cut through all the consolidated veins and has come away. No suppuration nor apparent inflammation accompanies the process. The patient need not be confined to his bed after the first forty-eight hours. The only caution to be given is, that in passing the needle the second time, *i.e.* in front of the veins, its course must be entirely in the cavity of the scrotum, since if some of the living fascia be strangulated in the loop, the case will be considerably retarded, and some amount of suppuration, accompanied by swelling in the walls of the sac, is likely to ensue. The operation is, when well performed, but very slightly painful. (*Lancet,* June 12, 1875.)

Extracts from British and Foreign Journals.

Esmarch's Bloodless Method.—A good paper on this subject, by Dr. Henry Sands, is contained in the *New York Medical Journal.* Though perhaps familiar to many of our readers, we shall reproduce the details as given by Dr. Sands for the benefit of those who may not have had the opportunity of seeing the method practised. The bandages, he says, should be composed of elastic webbing, or, what is better, of simple sheet-rubber, which can be more readily cleaned than the webbing when it has become soiled. The bandages should be about two-and-a-half inches wide, and it is convenient to be provided with several of them, each three yards in length, rather than to employ one long bandage. As a substitute for the tourniquet some surgeons use a piece of the same bandage; others employ a solid rubber cord or rope about a quarter of an inch in diameter, while Esmarch himself recommends for this purpose a piece of tubing made of non-vulcanised rubber, which is softer and more yielding than the other varieties. The application of the bandage in ordinary cases is quite simple. It is put on with moderate compressing force, and carried from the fingers or toes to any desired height. The constricting cord or tube which is to take the place of the tourniquet is then wound two or three times round the limb immediately above the upper edge of the bandage, and made fast either by a knot or by a hook and chain, or any similar contrivance. The bandage is then removed to expose the parts for operation. Some experience is needful to apply the bandage with the proper degree of force. Often it is employed too firmly, and this mistake is pretty sure to be made by beginners. On the other hand, it may be applied too loosely, and Dr. Sands has several times seen it put on with just sufficient force to allow venous congestion of the parts, with consequent hæmorrhage during the operation. The same remark applies with equal truth to the use of the constricting cord, which, if applied too loosely, will cause venous engorgement, and if too tightly, may do serious damage to the nerves and probably also to the blood-vessels of the limb. The skin, when exposed after the removal of the bandage, is seen to be blanched and anæmic, and when the deeper tissues are cut into, they are found to be nearly or quite bloodless. The vessels, both arterial and venous, are almost absolutely empty, so that an amputation of the thigh can be performed without the loss of more than five or ten drops of blood. As soon as the constricting band is removed, the large vessels having been previously secured, the blood returns to the part with considerable force, and a pretty free oozing commonly takes place. This is usually quickly checked by the use of cold water, aided, if necessary, by gentle pressure. With slight modification in the adaptation of the apparatus, the method may be applied to amputation at the hip or the shoulder-joint. The advantages claimed for the bloodless method are, that it is sometimes the direct means of saving life by economising the vital fluid; that it renders the healing process more certain and speedy; that it diminishes the frequency of septicæmia and pyæmia; that it enables the surgeon to accomplish deep and difficult dissections, the tissues not being obscured by blood; that it permits the easy extraction of foreign bodies and the thorough examination of diseased bones and joints. The objections made to its use are, that the pressure impairs the vitality of the parts and causes them in many instances to slough; that it sometimes affects injuriously the nerve-trunks, giving rise to paralysis both of sensation and motion; that it may induce plethora of the internal organs; and lastly, that in cases of gangrene or unhealthy suppuration, poisonous fluids may be passed into the blood-vessels or into the healthy tissues by the bandage, and thus occasion septicæmia or pyæmia. Dr. Sands proceeds to give the details of 143 cases of operation, of which 63 were amputations. Of these last, 10 cases terminated fatally, or 22·7 per cent. Four died from pyæmia, three from exhaustion or shock, one from spreading gangrene, one from erysipelas, and one from hæmorrhage. Dr. Sands' conclusions are highly favourable to Esmarch's plan, though he thinks the method will not prevent pyæmia, whilst care should be taken when dissections are made that large vessels are not divided. (*New York Medical Journal*, No. 1, 1875.)

Periostitis of the Temporal Bone complicating Purulent Otitis.—Dr. Duplay observes that when, in the course of an acute or chronic purulent otitis, pain, swelling, and redness of the peri-auricular and mastoid region supervene, we at once suspect that a grave complication has arisen, and we fear that suppuration of the mastoid cells has occurred. Under appropriate treatment, these symptoms may all gradually disappear and resolution take place, or the inflammation may proceed to suppuration, from which, after the spontaneous or artificial evacuation of the matter from the mastoid cells, the patient may make a good recovery. The cases to which he desires to draw attention are those of external periostitis over the mastoid process, which he thinks is not sufficiently known. In his experience it supervenes almost exclusively in the course of purulent catarrh of the tympanum, with more or less extensive destruction of the membrana tympani and implication of the meatus auditorius osseus, or part corresponding to it in the new-born infant. The treatment should consist in making a very free opening as soon as the presence of matter can be satisfactorily determined. (*Archives Générales de Médecine*, May 1875.)

The Fluids contained in Hydrocele of the Tunica Vaginalis.—Dr. Méhu divides pathological collections of fluid into two groups: *serous liquids*, which correspond to those of acute pleurisy, hydrothorax, ascites, hydrocele of the tunica vaginalis, certain fluid collections in the subcutaneous cellular tissue resulting from contusions, hydrarthrosis of the knee-joint, and hygroma. These fluids are of a yellowish tint in general, and are all rich in albuminous matters. The second group comprises the *seroid liquids*, as the cephalo-rachidian fluid, the contents of hydatid cysts, encysted hydrocele of the cord and of the epididymis. These differ *inter se* more than the former group. Some are sharply distinguished by containing some special morphological element, as echinococci or spermatozoa; they are usually colourless or slightly milky, without fibrin or albumen, or with but traces of them. The constituents of the liquids of the *tunica vaginalis* are identical with those of the serum of the blood, though the solid residue after evaporation is somewhat greater. They are usually limpid, even when they contain a large proportion of albumen. They filter easily, owing to the absence of fibrin. He twice, however, observed them to coagulate after removal from the body. They occasionally contain cholesterin. The liquids of hydrocele of the tunica vaginalis are never colourless, but have always a more or less amber or orange, deepening into icteric green tint; but the liquids of encysted hydrocele of the epididymis are neither yellow nor green, but present the aspect of water to which a few drops of milk have been added. They contain myriads of spermatozoa. They are alkaline to test paper. Dr. Méhu gives the details of the analyses he has made on a large number of cases of the fluids contained in both the above varieties of hydrocele. (*Archives Générales de Médecine*, May 1875.)

The Course of the Temperature in Defervescence.—Dr. Finlayson remarks that the observation of the temperature in cases in actual practice affords charts that are widely different from those that are given in books, taken from typical cases, and that it is difficult to draw conclusions from them; and he proceeds to consider an ideal case in which the practitioner is anxiously watching the course of a febrile disease when a crisis is expected, or when defervescence may seem to have begun, and to consider what fallacies may present themselves. In the first place, so long as the febrile temperature persists the disease continues; but a fall of the temperature is *not* necessarily a favourable prognosis. In the case, for example, of basilar meningitis, the temperature is seldom very much elevated, and a marked diminution from the previous heights of a *tubercular fever* may sometimes be seen when the cerebral symptoms begin to assume a special gravity; so that whilst a too exclusive reliance on the indications of the thermometer might lead to a favourable opinion being given in regard to the actual condition of the patient, the depression of temperature might really be due to the failure of the vital powers. In *pneumonia*, again, although the usual course of a fatal case is to attain a maximum before the termination in death, there may be exceptionally a low temperature preceding this event, either continuing to the end or giving way to a terminal exacerbation. A depression of the temperature to the degree of collapse may be associated with severe intestinal hæmorrhage in *enteric fever*, or possibly even with perforation of the bowel, and this depression may perhaps be the earliest of such accidents. A great depression may likewise follow *other forms of bleeding*, remedial or otherwise, and it is sometimes associated with the act of *vomiting*, or with a profuse *discharge from the bowels.* A collapse temperature may, however, be of no evil omen, and may constitute one of those critical perturbations which not unfrequently pave the way for a genuine crisis within twenty-four or forty-eight hours. The best means of avoiding being led into such errors are: (1) By paying careful attention to the state of the pulse and the general condition of the patient; and (2) By acquiring familiarity with the usual course and the common deviations of the temperature in special diseases. The sudden rise and fall of the temperature in an ague, or in the course of a few days in relapsing fever, may bear a superficial resemblance to the alternations in the pyrexia of pyæmia without possessing anything of the gravity of this fatal disease. Hence a fall of temperature immediately after observations have been commenced must be interpreted with caution. Dr. Finlayson gives instances of the differences in the rapidity of the fall of temperature in the crisis and lysis of various affections, it being usually sudden in the former, and slower and more steady in the latter. The temperature of convalescents is unstable, and when relapses or complications are feared, the evening observations should be continued. (*Glasgow Medical Journal*, April 1875.)

Some Facts concerning Pneumonia.—Dr. W. B. Rodman has recently had the opportunity of treating in the Kentucky State Prison Hospital a large number of cases of pneumonia, which he attributes to the bad ventilation of the "cell-house," in which 700 men sleep in cells that only contain about 500 cubic feet of air each. The mortality was 6 in 75 cases, or 8 per cent., but since using a particular plan of treatment he has had no death in 23 cases. The treatment adopted in ordinary cases was as follows:—On the patient presenting himself he was thoroughly bathed with warm water and a mustard emetic given. The bowels, if constipated, were moved with some saline, generally magnes. sulph. and potass. bitart. The whole of the affected lung or lungs, as the case might be, was enveloped in a turpentine stupe, which was kept on till the second stage began. Warm moist applications were now made, as of woollen cloths wrung out of hot mustard and water. As soon as the bowels were opened, carbonate of ammonia in fifteen-grain doses was given in mucilage of acacia every three hours, with three grains of quinine with each dose. From the beginning the diet was most liberal, consisting of beef-tea, milk, eggs, &c. As soon as the second stage had set in whiskey was added to the above, sometimes as much as a pint and a half or a quart being administered in the twenty-four hours. The carbonate of ammonia and quinine were kept up till resolution was fully established. Opium was rarely given, especially in the later stages. When the bronchia were tolerably free, ten grains of Dover's powder were given at night. Blisters were not often used, but when the dulness was persistent they often proved very serviceable. Such was the treatment of ordinary cases. When the temperature was as high as 104° or 105° F., occasionally 106·5° (with ultimate recovery), quinine was given in large doses to obtain its antipyretic effect (10 and 15 grains). When this was insufficient, the wet pack was used to assist in abating the fever. Niemeyer's plan of cold-water treatment was tried, but with unsatisfactory results. Towards the later stages, if the pulse became weak and frequent (showing a weakened action of the heart from exhaustion), digitalis was used with good effect. Dr. Rodman frequently found it beneficial, when well-marked typhoid symptoms were present, to administer a solution of potassium chlorate and of the perchloride of iron tincture in combination with the above, the doses being 5 grs. of potass. chlorate and ♏ 30 of tr. fer. sesquichl.

every four hours. Dr. Rodman insists particularly on the value of carbonate of ammonia used from the *very beginning* of the attack, though he is unable to explain how it acts. (*Medical Record*, No. 227, 1875.)

Serpiginous and Phagedænic Ulceration, and Quinine.—Mr. Croft calls attention to the value of quinine in these forms of disease. In one case, of which full details are given, where serpiginous ulcers of syphilitic origin had long existed, iodide of potassium had been prescribed at various times in full doses. Mercurials had also been given internally in the form of the biniodide. Calomel vapour baths and topical fumigation had severally been employed without effect. Twice fuming nitric acid was applied without benefit. At length quinine in eight-grain doses was combined with scruple doses of iodide of potassium, and from this time a remarkably rapid cure commenced. In twenty-eight days he was able to walk out of the hospital to go to a convalescent hospital. No relapse took place. The eight-grain doses caused singing in the ears about one week after he had commenced to take the medicine; but it was not discontinued on that account. Mr. Croft gives two remarkable cases of phagedænic ulceration, one of which was syphilitic and the other non-syphilitic, in which quinine proved extremely useful. (*St. Thomas's Hospital Reports*, vol. v. 1875.)

Report on Cases of Pneumonia.—Dr. Peacock, of St. Thomas's Hospital, gives an interesting analysis of 100 cases of idiopathic pneumonia which he has treated in public practice. Of these, 30 were treated at the Royal Free Hospital, and 70 at St. Thomas's; 81 of the cases were men, and 19 women, which he shows corresponds closely with the results of other observers. The greater tendency to pneumonia in men is simply due to their exposure to the exciting causes of the disease. Pneumonia chiefly occurs in the periods of youth and middle age, when the system is most vigorous and the liability to exposure the greatest. Most of Dr. Peacock's patients followed laborious out-door occupations. The numbers were greatest in spring and summer, pointing to the production of the disease by sudden alternations of temperature and chills occurring in warm weather, when the functions of the skin are active, rather than by exposure to severe though more continuous cold. The duration of illness before the admission was in general only a few days, and the disease usually commenced with rigors or chills, followed by heat and pain, cough and expectoration; sometimes it supervened on ordinary catarrh. The right side was affected in 23, the left in 25, and both sides in 36 cases, the remainder not being named. The complications were, amongst others, hæmoptysis, delirium and otitis, capillary bronchitis and commencing phthisis, scorbutus, pericarditis, endocarditis, phlebitis, rheumatism and delirium, anasarca, jaundice, curvature of the spine, diarrhœa, herpetic eruptions. The temperature, though high, rarely exceeded 104° Fahr. It ranged from 99·3 to 104·5, and the highest temperature occurred in the first week. The mean period of residence in the hospital was at St. Thomas's, 35·5 days; in the Royal Free, 25·3 days. The deaths in all the cases were 11·7 per cent., or one death in 8·5 cases. In regard to treatment, in some, limited bleeding or cuppings were practised, and small doses of calomel, or grey powder, with opium or Dover's powder, were given internally. In others the treatment was rather of an eliminant and expectant character. Bicarbonate of potash, acetate of ammonia, and nitric ether were given, and with these were combined expectorants and anodynes, ipecacuanha, opium, or hyoscyamus. In both series of cases, stimulants—ammonia, brandy, or wine —were ordered when the patient's strength began to fail, and blisters, sinapisms, or poultices were applied externally. (*St. Thomas's Hospital Reports,* vol. v. 1875.)

A Pathognomonic Symptom of the Moribund Condition.—Dr. John Shrady, in a paper upon the "Moribund Condition," recently read before the Yorkville Medical Association, maintained that the earliest and therefore most valuable symptom of approaching death was the up-and-down movement of the trachea; that the inferior laryngeal nerve, owing to a partial paralysis or impairment of its function, is concerned in the production of this phenomenon, and sounds the first note of alarm that the medulla oblongata is invaded. This tracheal symptom is particularly prominent in fatal cases of uræmic convulsions, opium poisoning, apoplexy, and delirium tremens; the air then ceases to stimulate the glottis, the respiratory movements are impaired, and the lungs can no longer decarbonise the blood. In pneumonia, Dr. Shrady thinks this symptom is of special value, anticipating as it does alarming changes in pulse and temperature, whilst in phthisis he has known it to be a precursor of death three weeks in advance. Its presence or absence in membranous croup should, in his opinion, be an important element in the prognosis of a given case of tracheotomy. (*Medical Record,* No. 230, 1875.)

General Treatment of Chronic Nervous Diseases.—Prof. Benedikt remarks that in addition to electrical treatment, thermic and hydrotherapeutic treatment play an important part in the cure of these affections. Acute inflammation, producing trophic disturbances by exudation, requires when they have passed into the chronic stage, the application of heat in those forms which promote absorption, as warm and even hot baths. Chronic and progressive forms of inflammation, with hypertrophy of connective tissue, require hydrotherapeutic means. In chronic neuritis, as seen in muscular atrophy, tabes, &c., on the other hand, warm baths are injurious, and are at least incapable of arresting the progress of these diseases. In the stationary condition, however, they may prove serviceable. Hot baths are indicated in the treatment of the sequelæ of the acute and subacute inflammation of the central nervous system and of the membranes, providing they exhibit no tendency to progress; but they are contra-indicated when the neuralgia, anæsthesia, and paralysis increases, or where the brain and spinal cord are congested. If given at all, the intervals between them should be considerable and the patient should be put to bed at once, so that he is exposed as little to the air as possible. In peripheral neuralgiæ, which Benedikt regards as always depending upon neuritis and its consequences, the decision as to whether thermo- or hydro-therapeutic measures should be adopted is much more important than in central neuralgiæ; for in many instances the peripheral neuralgiæ originate in rheumatic conditions, in which the application of cold would act injuriously. In peripheral rheumatism, vapour baths, with electricity and judicious exercise, constitute the most advantageous method of treatment. Cases of hæmorrhage in the central nervous system require special precaution, for these are not, in the majority of cases, a local disease, but the expression of widespread atheromatous or varicose changes in the brain. In some of these cases all active treatment is contra-indicated; but in most cases the use of warm but not of hot baths is serviceable, providing there are no indications of motorial irritation, as contractions and convulsions. The presence of contractions, however, is not in itself a contra-indication to thermic treatment; and although they are rarely cured, yet they may be improved. Thermic and electrical treatment together should only be undertaken with great precaution, and sometimes not until six months from the date of the attack. Hydrotherapeutic procedures are only of service in relatively recent cases, and only when thermic methods of cure are of no advantage. Little is known in regard to the treatment of psychosis by the application of heat. The application of cooling measures in the mode adopted in febrile cases is very satisfactory in acute nymphomania, and may even preserve life. In chronic cases of dementia paralytica the methodical application of the cold water cure proves at least of temporary benefit; but the results of this plan of treatment are best in melancholia attonita. In all these forms of disease the thermic procedure constitutes a powerful agency for good, and the same may be said of the group of symptoms produced by neoplastic formations and idiopathic epilepsy. The cold water cure proves serviceable in hypochondriacal cases in consequence of its tonic action. In spermatorrhœa and impotence, in addition to the electric, thermic treatment is indicated, especially with powerful douches, though it must be used with care, since it sometimes proves injurious. Specialists have a high opinion of the effect of douches applied to the back of the head. Amongst local thermic measures, Chapman's application of heat and cold by tubes of india-rubber to the spinal column deserves special praise, the principle of which is that the temperature of the extremities and of the head stands in relation to the congested or anæmic condition of certain regions of the spinal cord. As a rule, no extreme temperature need be applied. Amongst the means of promoting resorption, electricity and warmth occupy a high position, and to them may be added iodine and quicksilver, which, applied coincidently, often effect remarkable cures, as is especially seen in cases of neuro-retinitis. Neither iodine nor mercury, however, are of much service in the chronic progressive forms of inflammation of the central nervous system, though they are particularly useful in the recent forms after hæmorrhages and in neoplasms. No distinction need be drawn as to whether the neoplastic formation is of a syphilitic or non-syphilitic nature. Narcotics and nervines are useful, and morphia and chloral as anæsthetics. In chronic nervous disease, both of these last should be avoided as far as possible, since the system soon becomes habituated to their use. When cerebral disturbances of the circulation are present, chloral is a very dangerous remedy. Atropine and belladonna are amongst the most valuable of the nervines, especially in spastic conditions. *Amyl nitrite* may best be applied as an odorous drug, mingled with double its weight of ol. fœniculi, in asthmatic and steno-cardiac cases, in epileptic faintness accompanied by pallor, and in migraine also, when they commence with paleness of the face. *Bromide of potassium* lowers the reflex excitability of the nervous system, and is therefore particularly useful in epilepsy. It is also a calmative in states of excitation, when not too intense, in sleeplessness not caused by pain, as in young children, and in melancholic states. It often acts well in neuralgic conditions, but large doses are required. It may be advantageously combined with iron. *Nitrate of silver* is especially useful in inflammatory conditions of the central nervous system and in epilepsy, but must not be pushed too far. *Zinc preparations* are serviceable in spastic conditions and in hysteria. Muscular gymnastics play an important part in the treatment of anæsthesia of the joints, muscles, and tendons after chills. Benedikt does not go quite so far as Griesinger in interdicting smoking, but acknowledges it is harmful in excess. The food, in conditions of nervous disease arising from irritation, should be mild ; hence has arisen the milk cure and the cures effected on exclusively vegetable diet. The dry cure is especially adapted for gastric diseases, as in dilatation of the stomach. Lastly, changes of air and scene and mental and moral influences are very important means of cure. (*Medicinisch Chirurgische Rundschau,* Feb. 1875.)

Contributions to the Pathology of Diphtheria.—Dr. Jacobi does not regard croup and diphtheria as independent diseases, but considers that only such differences exist between them as usually prevail between the sporadic and epidemic forms of the same disease. The membrane is an essentially epithelial product, and the peculiar granular amorphous material considered by Oertel and others to be the essential element of the disease is believed by Jacobi to consist of detritus and fat molecules, which are the products of the degeneration of the epithelial cells. He does not attribute much importance to the bacteria said to be present. The anatomical characters and peculiarities of the part affected have, he thinks, much to do with the more or less deep penetration of the disease into the subjacent tissue and the relative difficulty of its cure. The parts covered with pavement epithelium are most likely to be attacked with diphtheritic inflammation. Hence the tonsils and surface of the vocal cords are especially liable to be attacked.—(*American Journal of Obstetrics,* Feb. 1875.)

Treatment of Purpura Hæmorrhagica by hypodermic injections of Ergotine.—Dr. Angelo Cianciosi has obtained excellent results from hypodermic injections of ergotine in a case of purpura hæmorrhagica. The patient was a child of six years of age, of good constitution, who had up to that time never had any illness, but had occasionally suffered from gastro-intestinal disturbance. The parents were perfectly healthy. One evening this child was suddenly attacked with intense headache and fever. An hour afterwards free hæmorrhage took place from the nose and mouth. The hæmorrhage recurred four or five times in the course of the night, lasting ten or twelve minutes on each occasion. The loss of blood continued on the following morning. Spots the size of the head of a pin and of a bean appeared on the mucous membrane of the mouth, and others more confluent and of various sizes on the trunk and limbs. The spots did raise the skin and did not disappear on pressure; they formed ecchymotic patches on the left shoulder which resembled a bruise. The cardiac pulsations became very feeble, the strength diminished, and it became requisite to apply some remedy to arrest the repeated hæmorrhage. With this object in view, gallic acid in large doses was prescribed, and the hæmorrhage soon stopped; but five or six hours afterwards it recurred with great violence, the patient becoming quickly greatly depressed.

Under these circumstances Dr. Cianciosi decided to try the effects of hypodermic injections of ergotine, with an interval of an hour and a half between each. The first was made in the deltoid region, the second in the shoulder. After the third the hæmorrhage was arrested and did not re-appear, and recovery soon took place. (*L'Independente,* March 1875.)

Therapeutical Effects of Oxygen.—M. Tamin-Despalle, in a paper read before the Académie des Sciences, states that on the 18th April, about 2 P.M., M. L. was attacked with severe cerebral congestion. He fell, and on recovering himself found that the whole of the right half of the body was paralysed. The pulse was 82; the face was livid, and the stomach contained a considerable quantity of food. He had breakfasted about half an hour previously. M. Tamin-Despalle thought he ought not to bleed, to apply leeches, nor to administer an emetic. He ordered inhalations of pure oxygen. After the first few inspirations M. L. declared that he felt better, and the power of motion and sensibility returned in the paralysed side. At 6 P.M. some shivering occurred with an abundant discharge of urine and strong eructations. At 7 P.M., having consumed in all about eight quarts of pure oxygen, he was well. (*Gazette Médicale de Paris,* 1875, p. 229.)

Diagnosis and Treatment of Neuralgia.—V. Pitha calls attention to the great frequency of neuralgia, which he attributes to the increase of morbid excitability of the nervous system of the whole of the present generation. Neuralgia occurs at all ages, in both sexes and in every condition of life, especially in those of a nervous temperament. Hereditary predisposition can often be demonstrated. The proximate causes are often strains of the body, chills, injuries. V. Pitha himself has suffered for two years from the most severe neuralgia, in consequence of an accidental wound in an operation, and his account of his own case contains many points of interest. In particular he dwells upon the vagaries of the imagination in this affection, and states that he was perfectly convinced he had a stone in the bladder, the irritation of the projecting spiculæ as well as the blows of the stone against the mucous lining of the viscus being distinctly felt; and he was only satisfied of the incorrectness of his opinion after the bladder had been carefully searched with a sound. From that moment all the sensations vanished. From observations on himself and others, he believes the subcutaneous injection of morphia to be the most satisfactory mode of administering it, since it operates quickly, and the narcosis is slight compared with the great diminution of pain that is effected; moreover, it may be frequently repeated without injurious effects. The smallest effective doses should be commenced with, and these should only be increased when absolutely requisite. He gives a caution against employing morphia in those who have disease of the heart, as it sometimes produces in them deadly pallor, cold sweats, &c. When the toxic influence of morphia is manifested, he recommends energetic walking in the open air, washing of the skin with vinegar, clysters of strong coffee, and, in extreme cases, artificial respiration. As a remedy preventing the unpleasant after-effects of morphia on the stomach and intestinal canal, V. Pitha recommends hydrochlorate of quinine, or a minute proportion (100th of a grain) of atropin may be added to the injection fluid. (*Allgemeine Wiener Med. Zeitung,* 1875, No. 1.)

Treatment of Foreign Bodies in the Œsophagus.—Krishaber, in a case where a patient was suffering from the presence of a foreign body in the œsophagus, directed him to drink a large quantity of water. He then introduced a long whalebone sound armed with a dry sponge into the stomach, where he allowed it to remain till it had greatly increased in size by imbibition. He then slowly withdrew it, and thus swept the œsophagus from below upwards. A portion of bone was by this means withdrawn. M. Duplay, in commenting upon the case, observed that it would be difficult to fill the stomach with water if the patient could not swallow, and that if the sponge swelled too much its withdrawal would be painful. (*Séance de la Soc. de Chirurgie,* and *Centralblatt für die Chirurgie,* No. 16, 1875.)

Ergotine in Croupous Pneumonia.—The well-known contractile influence of ergot upon the vessels—shown by the anæmia of the invisible mucous membranes—led Dr. Wycisk (*Allg. Med. Central Zeitung*) to employ it in six cases of croupous pneumonia, and the results were very favourable. In one such case, with profuse serous and albuminous expectoration, the latter ceased entirely within two hours after the administration of the ergot of rye in powder, and the coarse rattling râles in both lungs gave way to the fine crepitation heard in the early stages of the disease. This effect lasted for two days, and on a second and even third return of the expectoration the ergot was administered with the same good results. None of the other five cases of pneumonia in which the ergot was employed terminated fatally, no sequela occurred in any; the effect of the ergot in all was to diminish the amount of the exudation and consequently the expectoration. The doctor, however, would not advise the use of ergot in large infiltrations, in emphysema, in cases of rupture of cerebral vessels, or in exhausted and decrepit individuals, as it might in such cases prove hazardous. (*New Remedies,* vol. iv. No. 2, p. 103.)

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⁂ Any of the foreign works may be procured on application to Messrs. Dulau, of Soho Square, W.C.; Williams and Norgate, of Henrietta Street, Covent Garden, W.C.; or Baillière, of King William Street, Charing Cross.

Department of Public Health.

THE IRISH FAMINE AND ITS RESULTS.[1]

[The following article is reprinted from the *Times* of the 26th February, 1875. It tells the story of the great Irish Famine of 1846–47. Many will remember that awful calamity and the pestilential typhus which followed upon it; but very few, we apprehend, will have any just conception of the social conditions which made the famine possible, and of the social results which have arisen from it. It is a great gain to the student of contemporary history to have the story of the famine and of its results related by a writer possessing the rare mastery of facts, perspicuity of judgment, and felicity of language manifested in this article. To the student of public health the article is of especial interest as furnishing a remarkable study of questions which so intimately concern him in relation to social and political conditions. We quote the article without curtailment.]

The great Irish Famine of 1846–47 fills a gloomy page in our national annals. This wide-spreading calamity was marked by scenes of appalling suffering, and will ever stand out as a tragic passage in a long history of many misfortunes. As always happens, too, in great social crises, it brought out in its most striking aspects the good and evil of human nature, and it exhibited in a pathetic drama contemplated by the civilised world the extremes of endurance and resignation, immense benevolence and far-reaching sympathy, alternating with mere callous selfishness and indifference to moral claims and duties. Yet, memorable as the visitation was, its results have been even more important, and the lessons it teaches even more instructive. Like the storm which clears and sets free while it ravages, the desolating trial of thirty years ago smote at once the whole social fabric of Ireland, and opened it to improving influences; and a brief season of cruel affliction has been a turning point in the national life from which we may trace new growth and advancement. The events of 1846–47 relieved Ireland from a dead-weight of misery that seemed almost to forbid her progress; they produced a train of noble reforms by concentrating the attention of statesmen on the peccant parts of her distempered frame; and, in a word, the felicitous change which, in our days, has passed over the country must, in a great measure, be ascribed to them. Nor were the consequences of this troubled time confined to the land which, in the first instance, was the theatre of its most woeful incidents. The Empire owes to the distress of Ireland the rapid accomplishment of free trade, with effects extending throughout the globe; and the emigration of the Irish millions which has gone on during this generation has had a direct and most potent influence on the fortunes of the American Commonwealth and of other divisions of the human family. Looking at the subject, too, from another point of view, impartial history will, we believe, record that the efforts made by the British Government to mitigate and cope with the awful calamity under which Ireland, for a time, collapsed, were on the whole worthy of a great State; and it signally attests the enormous difficulties of rulers in such a position of affairs, and the expediency, in times of national dearth, of keeping steadily in sight the maxims of sound sense and political science, and deviating from them as little as possible. For all these reasons we shall briefly retrace the vicissitudes of the Irish Famine; but if we select this work as a text, our commentary will differ widely from it, nor can we in any respect commend it. We do not say, indeed, that Mr. O'Rourke is not a laborious and patient compiler, and he has put together a variety of details, which, though not effectively grouped and arranged, are of real use to a student of the time, and throw a good deal of light on his subject. But his book is pervaded from first to last with what we can only describe as a spirit of passionate hatred of England; and he is so ignorant of the elementary knowledge required even to comprehend his theme, and so blinded by the false belief—too common, we regret to say, in Ireland—that the State must be looked to to do everything, that his conclusions are almost always unsound, and his views too often absurd or distorted. What, in fact, can be said in behalf of a writer who insinuates that British law and government were the cause of the misery of 1847; who contends that Parliament had the power of turning want into ease and plenty; who thinks legislative quackery a surer means of supplying the needs of a distressed people than the energies of unrestricted commerce; and who alike makes no allowance for the trying position of an Administration at a tremendous crisis, and persistently represents its untiring efforts to assuage suffering and avert famine as pedantic blundering or selfish indifference?

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[1] "The History of the Great Irish Famine of 1847." By the Rev. John O'Rourke, P.P. Dublin, 1875.

The Famine of 1846–7 was only the last of many calamities of a similar kind that had passed over Ireland. The gorgeous cloudland of mythic tradition high-piled by the imagination of the Celt is diversified by numerous spots of gloom denoting seasons of extreme dearth; and the earliest authentic records show that the aboriginal Irish were often exposed to scarcity and its attendant evils. Each century of Norman rule in Ireland is marked by the traces of cruel famines, and the sufferings of the people must have been terrible in a land convulsed by the strife of races, where Feudalism wore its most repulsive aspect. The horrors of the years of want and wretchedness, which followed the close of the Desmond wars, are commemorated by the pen of Spenser; and his vivid picture of the "anatomies of death, eating carrion, and crying like ghosts from their graves," brings home to the mind a fearful impression of the state of the peasantry at this period. The invasion of Cromwell inaugurated an era of appalling dearth, in which "the people," it was said, "lived like brute beasts;" and the father of medicine gave the name of the "Irish dysentery" to the consuming disease which soon afterwards swept over the country and made its destructive way into England. The effects of the wars of William III. seem to have been in many respects similar; and famine and pestilence, it is thought, struck down nearly third of the native Irish race in the second half of the 17th century. The first really trustworthy account, however, of a period of general want in Ireland, in an age of anything like order, is that of the great Famine of 1739–41, which presented scenes in many particulars resembling those of 1846–7. At this time the land system of Ireland had begun to assume the peculiar form which it finally took many years afterwards, though it had not attained its full development. An increasing population spread over the soil, eking out life on a precarious root, and ruled over by an alien caste; and the great body of the Celtic peasantry were continually on the verge of extreme scarcity. In this state of things, it is said the potato was blighted in a week by a severe frost; and before long want and its companion, disease, were doing their deadly work through the affrighted country. The misery of the two succeeding years is attested in many publications of the day, and as a Poor Law for Ireland was not yet dreamt of, and no attempt was made to organise relief, we can readily believe that of a population then numbering about 2,000,000 persons, not less than 400,000 perished. One circumstance draws a broad distinction between this famine and that of our age. The Irish Parliament made no effort to mitigate distress even by taxing property; and, as a necessary result, the visitation of 1740 was infinitely more destructive than that of 1847, though the last was a much more searching trial. During the eighty years that followed 1740 there were many seasons of dearth in Ireland, and, in all these instances, the cause was the same, the partial failure of the untrustworthy root, which fed the swelling millions of the Irish peasantry, and placed them at the lowest level of existence. Yet during this period no earnest attempt was made to improve this state of society, and, in fact, all that was worst in it had gone on increasing with dread rapidity.

A variety of causes had promoted to an extraordinary degree the growth of the population of Ireland, and the evil results, perhaps, more than balanced all the good effected in the meantime by liberal reforms and improved government. By 1820 Protestant ascendency and landlordism had been in part restrained; but the 2,000,000 of three generations before had multiplied into nearly 7,000,000, and two-thirds of this mass of humanity depended for life upon the potato, and was rapidly gravitating towards want and wretchedness. It is but fair to say that this state of things was a legacy of the Irish Parliament; but it is to be regretted that twenty years after the Union it had continued unchanged, or perhaps had gradually changed for the worse; and the chief reproach that can be justly urged against our Irish rule in those days was that statesmen were not sufficiently alive to the immensity and the imminence of the peril. In 1822 a faint prelude was seen in Ireland of the catastrophe of the next generation. In the preceding harvest the potato had failed in several parts of Munster and Connaught, and considerable districts in the south and west were plunged for some months into very great misery. The distress, however, was only partial; and though no Poor Law as yet existed, it was lessened by charity and Government grants, the Imperial Legislature having in this respect acted very differently from its Irish prototype. Fourteen years having passed, the frightful evils of Irish poverty, in its extending growth, attracted the attention of the heads of the State, and the Government of Lord Melbourne made a real attempt to deal with the worst of Irish difficulties by the inauguration of the Irish Poor Law. This system, however, was only developed very slowly; its introduction was, in fact, difficult in a country swarming with a pauper peasantry, and was actually opposed by Irish agitators, and even as late as

1844 it was merely in its immature infancy and was wholly unequal to meet an emergency. By this time the state of affairs which had been in progress for years in Ireland had, at last, reached its complete proportions, and experience was soon to show how terrible were the evils which lay concealed within it. In 1844 the population had acquired an Asiatic density; it numbered more than 8,000,000 souls, and though the country had increased in wealth and numerous signs of progress were seen, especially in Ulster and parts of Leinster, still the immense majority of the overcrowded peasantry were mere struggling and impoverished serfs; and it had been ascertained that of the Irish community not less than 2,500,000 persons were continually on the brink of starvation, preying on the country like a devouring incubus. Society, in this condition of things, was, it was said with equal terseness and truth, based on the potato and nothing else; it was this, in fact, alone which enabled millions of petty occupiers to maintain life on infinitely sub-divided patches of land; it was this alone which fed an enormous mass of vagrant beggary, to be seen everywhere; and it formed, so to speak, the main element of rent, of wages, and even of currency. To complete the picture it must be added that Ireland was, to a large extent, possessed by needy and bankrupt landlords, in race and faith cut off from the people, divided from them in thousands of cases by the intricacies of a barbarous mode of tenure, and often without the inclination or the means to improve their estates or to raise their dependants. Thus, notwithstanding some marks of advancement, the island, even in its normal condition, was ever, so to speak, on the border of an abyss; and the frame of society, disordered throughout, exhibited its ills in widespread wretchedness, in divisions of class, and in chronic disturbance. What would be the issue should a sudden calamity destroy the frail and treacherous root on which this whole order of things was based?

This consummation was now at hand, with far-spreading and permanent results. In the autumn of 1845 the potato was attacked by a mysterious disease, and before long a cry rose from Ireland that the people were in the grasp of famine. The great Minister who was then in power acted with remarkable promptitude and vigour. Having ascertained that a large part of the potato crop was unfit for food, he made up his mind to repeal the Corn Laws; and, in order to secure the means of existence in the most remote and distressed districts, he purchased a supply of Indian corn, which was secretly stored in Government depots, and set on foot a system of public works sustained wholly by grants from the Treasury. Whether these last measures of Sir R. Peel were altogether politic admits of question; but, though they involved a large expenditure, they were not put to a very severe test, for as the failure of the potato in 1845 was not so general as had been feared, and the yield of cereals was very prolific, want in Ireland in that year was not excessive. What, however, was in 1845 but the foreshadowing of approaching evil became in a few months a tremendous reality. In the second week of August, 1846, the potato was blighted throughout Ireland; and the effect equalled all that has ever been heard of the devastating march of the tropical blast or the ravages of the locust tempest. The plant seemed struck by some malign influence; in a few hours its gay summer blossoms and rich leaves shrivelled up and putrified, and far and near, in all parts of the island, the vast green spaces which marked its presence became desolate breadths of noisome decay, standing out ominously in the bright harvest landscape. Those who beheld the sight will never forget it; and the aspect of the peasantry, who almost everywhere showed they felt a dread visitation was near, gave the spectacle a touching human interest. By this time Sir R. Peel had resigned, and the Government of Lord Russell addressed itself to meet an evidently impending crisis. The measures of the Cabinet were, in some respects, most wise; and, even if misled by recent experience it possibly underrated the approaching peril, it is most unjust to judge too severely the acts of statesmen at such a conjuncture. As it was at least doubtful whether the late purchase of Indian corn by Sir R. Peel was not contrary to sound principle, the Government of Lord Russell properly resolved to trust in the main to the powers of commerce for the general relief of Irish distress; and it declared that it would not interfere with trade in the importation of food into Ireland, and that, even as regards the internal trade, it would interfere as little as possible. At the same time, as whole tracts of the island were almost devoid of retail traffic, and especially of that in corn and provisions—the potato having been the whole support of life—it determined to establish State depots in certain places with supplies of food, directing, however, that these resources should be distributed only where want was extreme, and that they should not be sold under the market price, in order to avoid the great mischief of banishing or keeping away the ordinary dealer. The question, however, was one not of food only, but of finding means for an unknown number of impoverished human beings to procure it; for destitution, it was known, would be great, and the Poor Law system was not yet sufficiently developed to rely wholly on it. In this position Lord Russell turned to the expedient adopted by his predecessor, providing, however, for its extension, and at least taking some obvious precautions. Public Works, presented by Local Boards, were to be executed in distressed districts; and those considered entitled to relief by committees acting upon the spot were to be set to labour at these constructions and to be paid accordingly in money wages. The Treasury, which from the very outset was liberally opened to assist Ireland, was in the first instance to pay for everything; but half the charge was ultimately to fall upon the land, in order to check mere waste and extravagance. The Irish Board of Works was entrusted with the superintendence of this scheme of relief, and the Cabinet entertained hopes that private enterprise would largely supplement and supersede in a great measure the immense system of artificial labour established to meet the sudden emergency.

Meanwhile the shadows of an awful cloud had been gathering over the devoted land which had been the object of this solicitude. Five-sixths of the potato crop at least perished; the oats, too, the crop next in importance to the Irish peasantry, largely failed; and, before autumn had closed, it had become too evident that a season of frightful dearth had set in. For a few weeks the mass of the poorer people contrived to eke out a precarious existence on what remained to it of the produce of the soil; but, by the winter of 1846-7, this resource had, in the main, disappeared; and in the following spring the pressure of want had reached a terrible and portentous climax. Eye-witnesses of those woeful months still picture them vividly to their memories, and even now can be hardly trusted to consider them in a historical spirit. Though somewhat checked by the last bonds of protection, the supplies of food that poured into Ireland were, without exaggeration, enormous, and no doubt can exist that, although depending on the interested efforts of private enterprise, they were infinitely larger than they could have been under any system of State interference. But it was not in the power of man to meet the inevitable effects of the general collapse of an entire community, and famine, so to speak, for too long a period contended for the possession of Ireland, and in some places, unhappily, triumphed. The presence, however, of the fell invader was not universal throughout the country; it was confined to certain well-marked limits. In Leinster and the colonised parts of Ulster, and even in Munster, east of the Galtees, the potato was the staple of the body of the people, but there was some capital saved, a retail trade, and a large admixture of English influences, and here accordingly there was but little starvation, though destitution spread far and wide and society was rudely shaken and disorganised. West of this line, however, through the vast region which extends from Lough Foyle to the borders of Cork, the visitation was much more severe and effectual in the work of destruction. Except at a few cities and favoured spots, this division of Ireland had hardly any commerce. It was the poorest part of a poor country, and was separated from England by hundreds of miles; and hence, when that which had been the sole support of its millions was suddenly swept away, the consequences were most appalling. For several months of 1846-7 considerable tracts in the west of Ireland were literally within the jaws of famine, and, notwithstanding all that was done to avert and baffle its cruel attacks, thousands became victims of the dread destroyer and of its more fatal attendants disease and pestilence. A silent enclosure near the Ilen marks the resting place of a vast mass of mortality which gave a tragic name to Skibbereen; and week after week a fresh tale of premature and afflicting deaths came from Mayo, Donegal, and Galway. In numerous instances, too, doubtless no record exists of what was endured; the unvisited glen, the secluded hut became the grave of many an unknown sufferer; and even as regards the millions who survived, the lean, cadaverous, and sad aspect of the multitudes who sought and obtained relief told too plainly what in many places was the misery of the famished population.

We turn to consider the means adopted to lessen the effects of this awful calamity. It can hardly be said that the Irish gentry afforded the Government much assistance by subscribing funds or employing labour, and throughout the famine the national tendency to make the State do everything was very apparent. It must, however, be borne in mind that in 1846 and the following years the resources of this class were grievously reduced, and that hundreds of landlords were simply beggared, and extraordinary sympathy could not exist between the order, as a whole, and the people. By the winter of 1846-7 the Irish workhouses more than overflowed, and the gigantic mass of destitution caused by the failure of the crop was flung on the system of public works, which had been improvised a few months before—the last plank of safety in the great social shipwreck. Day after day despairing Relief Committees sent fresh numbers to the tale of the employed; week after week the officials of the Board of Works saw with alarm new swarms of hungry figures crowd to the roads which, in every part of the country, were the melancholy scenes of their forced labour; and at last fully 3,000,000 souls were directly or indirectly sustained on wages furnished and controlled by the State. Meanwhile the Government stores were thrown open in the remote districts of the south and west; magnificent and world-wide charity poured its contributions into the afflicted land, and as the Executive adhered to its rule not to interfere with the retail trade, food, though necessarily at an excessive price, was more abundant than could be expected. Condemn it as we may in the abstract, this system of relief preserved Ireland from a catastrophe at which humanity shudders; and if famine made its thousands of victims, the Labour Rate Act, as it was called, the Treasury, and the noble benevolence of England, were the means of saving millions of lives. The expedient, however, of supporting a people on Public Works with the money of the State and under the check of a Central Board only was inevitably fraught with enormous abuses, and when it had become evident that the employers of labour were not likely to give much aid, the Government had to devise other means of dealing with the fearful question before it. Independently of the complete removal of the last restraints on the import of food, the chief of these, with some lesser measures, was the introduction of a new plan of relief, which came into operation in the spring of 1847. Under this scheme the existing system of forced Public Works was almost abandoned; relief was to consist of food only, the practice of giving relief in money having proved, as may be supposed, most wasteful; destitution was subjected to better tests than that of willingness to work on roads, and the authority of the Board of Works, which previously had controlled everything, and which, though its efforts had been admirable, had been unable to prevent frauds and jobbing on an enormous scale, was distributed within certain limits, and subject to a general supervision among local committees, chosen in the main from the classes liable to the charge of poverty. The Exchequer, as hitherto, was to lend its assistance to Ireland in the hour of distress, and to make the advances that might be required, but half of the cost was to fall, ultimately, as under the Labour Rate Act, upon Irish property.

Under this system Ireland struggled with famine during the spring and summer of 1847. The sufferings of the want-stricken districts continued terrible in the extreme, and though deaths by starvation were comparatively few, the ravages of fever and disease were appalling. The pressure, too, upon all classes throughout the island was beyond example; whole tracts, abandoned by their occupiers, became dreary and barren solitudes; and every town wore a look of penury and gloom. The destitution was so enormous that, notwithstanding the precautions of the law, the number of persons in receipt of relief varied from 2,000,000 to 3,000,000 for months, and the whole structure of landed relations in many places completely collapsed. Yet, owing in a great degree at least to the efforts of the State and of universal sympathy, the nation passed through the fearful ordeal, and the later measures of relief were, in every respect, more successful than those of the earlier period. Relief in food was found more effectual to mitigate distress than relief in money, and much less liable to fraud and wrong; the labours of the local committees were, speaking generally, worthy of praise, and necessarily involved less charge and waste than the cumbrous operations of the Board of Works, and the ultimate cost of the new system was not nearly a half of that of the old. So the summer of 1847 passed, and as prodigious supplies of food continued to flow in from abroad and the harvest promised an abundant yield, the tremendous strain by degrees slackened, and the portentous mass of the recipients of relief in some measure declined in numbers. "Land," in a word, was seen through the breaking storm, and Parliament very rightly decided that, if the State should still aid Ireland, securities should be taken if possible against the recurrence of what had happened. The Poor Law was extended and made effective by a necessary license for outdoor relief, on a large and yet not an extravagant scale, and though grants from the Treasury were even now made, the principle was distinctly asserted that Irish property should support its poverty. Efforts were also made to attract capital to Ireland, and to quicken her industry, by loans for draining and landed improvement, and by the simplification of landed tenures; and the Encumbered Estates Act was at last passed—a reform which almost resettled the soil and freed it from a race of nominal owners, unable to perform their social duties. These combined measures had admirable effects, and though from 1848-1851, when the famine period may be said to have closed, Ireland passed through a season of long distress, and the sufferings of thousands were still severe, destitution was effectually relieved and controlled, and society emerged from what, at one time, seemed an irremediable and hopeless crisis. Meanwhile the visitation had consequences which were to prove the best and, indeed, the only real means of solving the greatest of Irish difficulties. The circumstances of 1846-7 had lifted literally in millions from the soil the dense masses of Irish poverty, and as the Poor Law and other measures of relief had made the possession of land a bar to State aid, this dead weight of wretchedness was largely prevented from permanently returning to the occupation of the soil on which it had hung as a destructive burden. By degrees, and in a variety of ways, it was borne to other parts of the world; and thus began that immense emigration which has ever since been in steady progress, and has affected to such a remarkable extent the destinies of Ireland and other countries. That the exodus was accompanied by much suffering and premature mortality is but too true, but most certainly it was the first condition of a real change for the better in Ireland; and, notwithstanding sentimental complaints, those who have derived the greatest advantage from it have been, as was just, the Irish race.

A few figures will, perhaps, strengthen our impressions of the famine of 1846–7. The deaths by starvation have been estimated at 27,000; and 275,000 persons are believed to have perished from disease or decay more or less traceable to the dread visitation. On the other hand, from 1,000,000 to 3,000,000 persons were supported almost wholly by the State from 1846 to the end of 1847, and, terrible as the mortality was, it sinks into insignificance compared with that of 1740-1. The charge of sustaining this mass of poverty considerably exceeded £6,000,000; and, without taking into account the enormous burden of the poor rate from 1848 to 1851, the Government advances in respect of the famine reached ultimately more than £10,000,000, of which nearly half was a free gift. The contributions of private charity are supposed to have exceeded £2,000,000, and probably such efforts were never made to rescue from want a suffering people. As for the population, it certainly declined 1,500,000 from 1846 to 1851; but emigration accounts for 900,000 of these, and, taking the abnormal deaths at 300,000, the residue is to be found in ordinary deaths and in an extraordinary diminution of births. In many instances the effects of the famine were to destroy and paralyse human affections, and to transform the nature of man into brutishness, as has always happened in similar trials; but the conduct of the people on the whole was admirable—a model of patience and kindly sympathy. The measures of the Government were, in the main, judicious, and if some exceptions may be taken to them, we must recollect the immense proportions of the calamity. It is perfectly clear the Cabinet was right in interfering with trade as little as possible, and in refusing to make the State the principal agency for the procuring of food. In emergencies such as 1846-7 private enterprise is to Government effort what the continuous flow of the silent dew is to a sudden and wasting shower in reviving the face of languid nature, and never, perhaps, was the power of commerce in alleviating and removing the ills of dearth so exemplified as at this great crisis. As for the demands urged by short-sighted ignorance that corn should not be allowed to leave Ireland, this would have enriched a few speculators, made the State responsible for the supply of food, in all probability aggravated want, and certainly done enormous injustice; and equally mischievous was the specious cry for Government depots all over the country. Even the agitation for what was called reproductive works on a prodigious scale was properly discountenanced by the Administration. This plausible claim involved a system of forced labour to an inconceivable extent, which would have proved fatal to natural industry; nor was much to be said for fanciful schemes, such as the reclamation of bogs by the State, or Lord George Bentinck's project of promoting railways. We incline to think that the only fault which can in fairness be found with the Government was that it did not summon Parliament in the autumn of 1846 and terminate the labour rate system sooner; and certainly Lord Russell was not alive to the peculiar importance of emigration at this juncture as a process of relief. We must not, however, scan too closely doubtful errors like these; and the sentence of history, we are convinced, will be that England and her rulers at this trying period were not unequal to their arduous duties.

A quarter of a century has since passed away. How different now is the state of Ireland from what it was before 1846! Political troubles, indeed, survive; a few signs of agrarian disturbance exist, and in all that constitutes material well-being there is still room for no little improvement. The progress of Ireland has not been so rapid in the last ten years as it promised to be; her agriculture is still backward; the mud cabin still too often marks the presence on the soil of the pauper occupier; the peasantry in Munster and Connaught still rely too much upon the potato. But, compared with the period before the famine, Ireland is a land of plenty and happiness; and there is abundant evidence that this prosperity will steadily advance with the march of time. Society in the island no longer rests on foundations utterly false and unstable; it no longer depends on a treacherous root; it is not now ever on the verge of an abyss, removed only a step from ruin. The legislation of 1847-50 has borne great and beneficent fruit; the Poor Law system has developed its results, and while property is compelled to support poverty, it keeps down its perilous growth. The discipline of the Encumbered Estates Court has made the upper classes frugal and prudent, and the Land Act of 1870 will, we hope, improve landed relations and encourage husbandry. These reforms have done much to control pauperism, to augment wealth, and to promote industry; yet their effects would have been little without the removal of the redundant population from the land through the immense emigration of the last twenty years. This, we repeat, has been the great gain of Ireland since 1846–7; it has relieved the country from a burden beyond the resources of a far richer nation; it has freed society from a most serious danger; it has made real agriculture possible and liberated the soil from a fatal mortmain; and it has done more than anything else to raise the condition of Irishmen abroad and at home. We shall not argue with those who contend that the Irish exodus was a calamity to which statesmen should look with regret; and it is nothing to the purpose that in a different state of society from that of 1844–5 Ireland might have supported her teeming millions without imperilling the whole community. The general results of this revolution have been gratifying in the extreme, and they are visible in every part of the island and in the relations of all classes. The wealth of Ireland has enormously increased since 1846; her rental has risen at least one-fourth; the profits of farming have probably doubled; the wages of labour have, in places, trebled; and, tried by every conceivable test, her history has been one of decisive progress. The happiest change of all, certainly has been in the aspect of the peasantry; the misery of the past has almost disappeared; corn has largely replaced the potato as food; and you meet looks of health and content where all had been degraded wretchedness. If the famine was a terrible visitation, it has been ultimately a source of welfare; and in this, as in other instances, Providence has caused good to grow out of evil.

MR. SIMON ON THE PREVENTION OF FILTH-DISEASES.[1]

IN our article in the last number of the *Practitioner* on Mr. Simon's Report on Filth-diseases, we left untouched his observations on the forms in which Filth is found producing disease, and on the prevention of Filth-diseases.

There is a special lesson conveyed in Mr. Simon's description of Filth operating as it stands. He writes:—

> "There are houses, there are groups of houses, there are whole villages, there are considerable sections of towns, there are even entire and not small towns, where general slovenliness in everything which relates to the removal of refuse-matter, slovenliness which in very many cases amounts to utter bestiality of neglect, is the local habit: where, within or just outside each house, or in spaces common to many houses, lies for an indefinite time, undergoing fœtid decomposition, more or less of the putrefiable refuse which house-life, and some sorts of trade-life, produce: excrement of man and brute, and garbage of all sorts, and ponded slop-waters: sometimes lying bare on the common surface; sometimes unintentionally stored out of sight and recollection in drains or sewers which cannot carry them away; sometimes held in receptacles specially provided to favour accumulation, as privy-pits and other cesspools for excrement and slop-water, and so-called dust-bins receiving kitchen-refuse and other filth. And with this state of things, be it on large or on small scale, two chief sorts of danger to life arise: one, that volatile effluvia from the refuse pollute the surrounding air and everything which it contains; the other, that the liquid parts of the refuse pass by soakage or leakage into the surrounding soil, to mingle there of course in whatever water the soil yields, and in certain cases thus to occasion the deadliest pollution of wells and springs. To a really immense extent, to an extent indeed which persons unpractised in sanitary inspection could scarcely find themselves able to imagine, dangers of these two sorts are prevailing throughout the length and breadth of this country, not only in their slighter degrees, but in degrees which are gross and scandalous, and very often, I repeat, truly bestial. And I state all this in unequivocal language, because I feel that, if the new sanitary organisation of the country is to fulfil its purpose, the administrators, local and central, must begin by fully recognising the real state of the case, and with consciousness that in many instances they will have to introduce for the first time, as into savage life, the rudiments of sanitary civilisation."

Such is the language which Mr. Simon feels called upon to use in describing a largely existing state of things among us after thirty years' sanitary legislation and work. The new sanitary authorities must begin their duties, if they are to be satisfactorily fulfilled, by recognising that in not a few instances they have to introduce the rudiments of common cleanliness among communities. Until this be done, the later knowledge we possess of Filth operating at a distance can hardly be effectually inculcated or acted upon. Of this distant operation, brought about by imperfect arrangements for sewerage and water-supply, Mr. Simon next gives a brief description. "For instance, houses which have unguarded drainage, communication with cesspools or sewers, may receive through such communication the same filth-infections as if excrement stood rotting within their walls; and public or private water-reservoirs or water-conduits, giving accidental admission to filth, will carry the infection of the filth whithersoever the outflow reaches."

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[1] Reports of the Medical Officer of the Privy Council and Local Government Board. New Series, No. II., 1874. In our last number, two misprints occurred in the article on those reports. For Dr. "Maxall" should be read Dr. *Blaxall*; for "Mr. D. N. Power," Mr. *W. H. Power.*

Now, whatever the defects may have been in sanitary legislation, so far as common filth is concerned operating where it stands, there has not been wanting since 1848 sufficiently comprehensive powers enabling local authorities to deal with it, if not with the completeness now sought for, at least so as to show some less degree of barbarism than existed at that date. Why there should have been so considerable a failure in the exercise of these powers is part of the familiar sanitary history of this country. Something rested with defective law, something also with defective organisation of the local authorities for sanitary purposes. These imperfections have been progressively amended, but there has been no corresponding amendment of the common filth of communities, except only in special instances. Whatever might be done to give greater efficiency to the law and to the organisation of the local sanitary authority, it gradually becomes evident to thoughtful persons that no amendment of the law and no improvement in the formation of the sanitary authority would prove effective unless some provision were made for the intelligent comprehension of the subject-matters of the law. From the beginning this had been admitted without question so far as the legal construction and bearing of the sanitary laws were concerned, and sanitary authorities almost as matters of course had their sanitary advisers. But in regard to the essential matters for which the law was conceived, the preservation of the public health, or in other words the prevention of disease, this was universally held to be a matter of common intelligence, and throughout the kingdom the inspector of nuisances, rarely other than a man of ordinary local intelligence, was regarded as the interpreter of all that concerned the health and physical well-being of the community. Whatever might be the advances made in sanitary knowledge, this was almost invariably reduced in local practice to the level of the comprehension of the inspector of nuisances, who, however essential and important in his place, neither by previous training nor by current opportunity was in the position to comprehend other than the common routine of municipal or rural cleanliness. This cleanliness was so absolutely a rule-of-thumb conception, that even where the inspector was most active, and most fully supported by his authority, it left almost unaffected the unwholesomeness of the filth it was designed to remove. Take, for instance, this action in respect to excrement-nuisance, when almost universally under this sanitary practice effective action was deemed to be obtained, when midden-steads were prevented being filled to overflowing, notwithstanding that they might contain many months' accumulation of Filth in a horribly offensive and mischievous state.

The General Board of Health on its establishment in 1848, expressing the opinion of all trained observers of sanitary work, pointed out that an essential element in successful work was a properly qualified medical officer of health,—essential because it was only in proportion as sanitary measures were put in operation with intelligent knowledge of the effect they were calculated to have in preventing disease, that this effect could be certainly secured. Such knowledge implied a medical training, and as a rule was only possessed by qualified medical men. It was not until the passing of the Public Health Act 1872 that this important principle was recognised by the Legislature, and the appointment of a medical officer of health was made compulsory upon all sanitary authorities. At length the great end at which sanitary workers had been long aiming was secured, and the newly appointed Local Government Board, under its first President, Mr. Stansfeld, had the honour of carrying successfully through the Legislature the recommendation of the Royal Sanitary Commission of 1869 on this subject. This was the crowning fact of sanitary legislation. It provided for the intelligent appreciation (in the true sense of the phrase) of the ways in which Filth becomes destructive, and in which cleanliness becomes preventive of destruction, without which Sanitary Acts are waste-paper and sanitary administration illusive.

Hitherto the inefficiency of sanitary law had arisen from defects of local administration. As the *Pall Mall Gazette* has aptly said: "We had already exhausted every source of administrative inefficiency which is to be found in inadequacy of powers, defects of initiative, and obscure intricacy of law. We had set up sanitary authorities who could not act, authorities who would not act, and authorities who did not know when, where, and how to act; it remained for us to establish authorities who could and must act, and then misdirect and mislead them into a confusion worse than inactivity. Having failed in every possible way at the circumference, we had yet to fail at the centre, and we have done it." In no respect has this misdirection and misleading been so conspicuous as in regard to the medical officer of health. The Local Government Board has deliberately entered upon the task of stultifying the appointment of this officer, by advising sanitary authorities through its inspectors that the actual work of prevention of disease rests with the inspectors of nuisances; the duties of the medical officers of health being especially directed to the limitation of disease when it occurs. As Mr. Henley puts it in a recent report on the working of the Public Health Act 1872: "It is only in those more serious and happily rare encounters with enemies whose detection and extermination require the insight and the astronomy of science, that the intervention of the medical officer of health will be indispensable. In ordinary times and under ordinary circumstances it is the inspector of nuisances who will fight the sanitary battle." In other words, the work of prevention of disease is a work for the inspector of nuisances, not for the officer of health; the experience of thirty years on this subject going for nothing with the Local Government Board. It is true that Mr. Henley in a subsequent sentence writes—"A sanitary organisation which should present an army of active and intelligent nuisance inspectors, well officered by men of scientific training, would certainly be competent to effect a revolution in the present unsanitary condition of the country;" but his notion of the officer is that his duty is to fight only against actually existing disease, not against the causes thereof, and to train the inspector of nuisances in the effective performance of subordinate duties which devolve upon him in carrying out the struggle. The Local Government Board has in fact adopted the monstrous course of advising sanitary authorities that the question of prevention of disease is a question of abatement of nuisance as conceived by the inspector of nuisances; and that success is to be measured by the removal of gross nuisance. It has deliberately stultified the appointment of medical officer of health, and throws its influence wholly into a perpetuation of the rule-of-thumb interpretation of nuisances which existed before the Public Health Act 1873; apparently believing that by multiplication of ignorance knowledge is acquired. The disastrous results of this policy are becoming very apparent in much futile and misdirected sanitary exertions, in a depreciation of the medical officer of health's proper duties and status, and in the almost hopeless misleading of sanitary authorities. That some gain of cleanliness will be obtained under the new sanitary organisation is a necessary consequence of a somewhat wider spread knowledge of decency; but of sanitary work, as a work of disease-prevention, to be carried out with strict reference to such object, and to be tested in its efficacy by results, no conception has been imported into the sanitary administration of the Local Government Board.

Mr. Simon proceeds to indicate the chief sources of excremental infection in regard to sewerage, illustrating in succession the want of sewers, the faults of sewers, the defects of house drainage and of water-closets and accumulative privies. Especially he points out how often house drainage, though done with good workmanlike intention, has failed for want of skilled guidance. On this point the appended reports of Dr. Blaxall and Dr. Buchanan on local outbreaks of enteric fever are of great value. He next discusses the standard by which arrangements for excrement-removal should be judged, adopting here the principles laid down in Mr. Netten Radcliffe's report on Excrement Nuisance, and indicates how flagrantly this standard is contravened in general practice. Following upon this are important observations on the importance of studying exceptional outbreaks of disease, and the strictness of search these often require for successful elucidation. He illustrates this part of his report by reference to Dr. Ballard's discovery of the transmission of enteric fever by infected milk supply, and the important results it has led to as shown in the appendix to his report. He then proceeds to consider the prevention of Filth-diseases.

This section of Mr. Simon's report consists of a unique summary of the principles upon which the prevention of Filth-diseases rests. The only satisfactory mode of dealing with this part of the report would be to reprint it. This, however, is needless, as all who are interested in the subject must read it. We cannot refrain, however, from quoting the introductory paragraph:—

> "In order to the prevention of Filth-diseases, the prevention of Filth is indispensable. Truism though this may seem, I think it needs to be expressly insisted on, as against any belief that districts, allowed to become filthy, can off-hand be made whole by disinfectants. To chemically disinfect (in the true sense of that word) the filth of any neglected district, to follow the body and branchings of the filth with really effective chemical treatment, to thoroughly destroy or counteract it in muck-heaps and cesspools, and ashpits, and sewers, and drains, and where soaking into wells, and where exhaling into houses, cannot, I apprehend, be proposed as physically possible; and the utmost which disinfection can do in this sense is apparently not likely to be more than in a certain class of cases (see § 39) to contribute something collateral and supplementary to efforts which mainly must be of the other sort. This opinion, as to the very limited degree in which chemistry can prevail against arrears of uncleanliness, does not at all discredit the appeals which are constantly and very properly made to chemistry for help in a quite different sphere of operation; with regard, namely, to the management of individual cases of infectious disease, and to the immediate disinfection of everything which comes from them. In this latter use of disinfectants, everything turns on the accuracy and completeness with which each prescribed performance is done; but such accuracy and completeness are of course only to be ensured where operations are within well-defined and narrow limits; and in proportion as disinfection pretends to work on indefinite quantities or in indefinite spaces, it ceases to have that practical meaning. Again and again in the experience of this department a district has been found under some terrible visitation of enteric fever, from filth-infection operating through house drains or water-supply; but with the local authority inactive as to the true cause of the mischief, and only bent on practising about the place, under name of disinfection, some futile ceremony of vague chemical libations or powderings. Conduct such as this, referring apparently rather to some mythical "epidemic influence" than to the known causes of disease, and savouring rather of superstitious observance than of rational recourse to chemistry, is eminently not that by which Filth-diseases can be prevented; and, contrasting it therefore with means by which that result can be secured, I would here specially note a warning against it."

THE VACATION IN RELATION TO INFECTIOUS DISEASES.

Hardly have the preliminary flights preceding the migratory rush of the vacation into the country and to the sea coast commenced, when an appeal reaches us relating to infectious disease contracted away from home. A child is convalescent from scarlet fever, but the peeling of skin is not yet at an end. It is desired to remove him to his home, but it is understood that he may not be carried there by public conveyance until danger of infection is at an end. What is the law of the subject? Such is the question put, and it seems to us that it may be useful at the present moment to state briefly, for the information of such of our readers who are unfamiliar with the Sanitary Acts, the law as to infectious diseases. First, however, we would offer a preliminary suggestion. Whenever infectious sickness appears among families when away from home, especially if they are living in hired apartments, the readiest and surest way of meeting the requirements of the law will be to summon the medical officer of health of the place or district and entrust to him, where necessary, those precautionary measures which the law requires to be taken after the termination of the sickness. By such a course being taken, the medical attendant will relieve himself of a responsibility which he would often perhaps find irksome; the proprietor of the hired rooms would facilitate their reoccupation, and the measures of disinfection would be executed under the supervision of the public officer who is responsible for the health of the community, and who will have at his command all necessary means to give to them efficiency.

The following is the law as to infected persons or things:—

Any person suffering from a dangerous infectious disorder, who wilfully exposes himself without a proper precaution against spreading the disorder in a street, public place, or public conveyance;

Any person in charge of such a patient who thus exposes him;

Any owner or driver of a public conveyance who does not immediately provide for its disinfection after it has, with his knowledge, conveyed such a patient;

Any person who, without previous disinfection, gives, lends, sells, transmits, or exposes anything which has been exposed to infection;

is liable to a penalty not exceeding 5*l.*

Persons transmitting, with proper precautions, articles for the purpose of having them disinfected, are exempted from the action of this provision.

If a person suffering from any dangerous infectious disorder enters a public conveyance without previously notifying to the owner or driver that he is so suffering, he is liable to a penalty not exceeding 5*l.*, and he is also required to pay the owner and driver all the losses and expenses they may suffer in carrying into effect the provisions of the Sanitary Act 1866, as to disinfection, which affect them.

No owner or driver of a public conveyance can be required to convey any person so suffering before payment of a sum sufficient to cover all these losses and expenses.

As to infected lodgings, it is provided that persons knowingly letting a house, room, or part of a house in which any person suffering from any dangerous infectious disorder has been, without having the premises, and all the articles therein liable to retain infection, disinfected to the satisfaction of a qualified medical practitioner, as testified by his certificate, will be liable to a penalty not exceeding 20*l.* For the purposes of this provision an innkeeper is deemed to let part of a house to any person admitted as a guest into the inn.

If an owner or occupier or person employed to let for hire or to show for the purposes of letting for hire, a house or part of a house, when questioned by a person negotiating for its hire as to the fact of there being in it, or having within six weeks previously been in it, a person suffering from an infectious, contagious, or epidemic disease, knowingly makes a false answer to such question, he is guilty of an offence, punishable on summary conviction. At the discretion of the justices having cognisance of the case, he is liable to be imprisoned, with or without hard labour, for a period not exceeding one month, or to pay a penalty not exceeding 20*l.*

The foregoing are the provisions of the law respecting infectious diseases which it chiefly concerns persons frequenting seaside and rural health-resorts in vacation to be acquainted with. Other provisions of the law refer to the powers and duties in relation to infectious diseases and hospitals which the sanitary authorities may exercise. These are of great importance, and include the power of cleansing or disinfecting a house or part of a house, upon the certificate of a qualified medical practitioner that these measures would tend to prevent or check the spread of infectious or contagious disease. These measures may be carried out at the expense of the authority, or of the owner or occupier, according to the circumstances of the case. The Sanitary Authority may direct destruction of bedding, clothing, or other articles exposed to infection from any disorder, and may give compensation for the articles destroyed. It is empowered also to provide a proper place, with necessary apparatus and attendance for the disinfection of woollen articles, clothing, or bedding, and to cause articles brought for disinfection to be disinfected free of charge; also to provide and maintain carriages for the conveyance of persons suffering under contagious or infectious disease to a hospital for the reception of the sick, or to the patient's own home, and may itself pay the cost of conveyance. Justices are empowered, on the certificate of a qualified medical practitioner, to order the removal, at the cost of the Sanitary Authority, to a hospital prepared to receive infectious sick persons suffering from any dangerous contagious or infectious disorder, being without proper lodging or accommodation, or lodged in a room occupied by more than one family, or being on board any ship or vessel. The Sanitary Authority may make rules, to be sanctioned by the Local Government Board, for removal to hospital and detention there so long as may be necessary, any persons brought within the district by ship or boat, and infected with a dangerous infectious disorder.

Such are the provisions briefly stated of the Sanitary Acts in relation to infectious diseases. Special provisions are made with reference to cholera brought into a district by ship or boat under an order of the Local Government Board, dated 17th July, 1873.

THE PRACTITIONER.

AUGUST, 1875.

Original Communications.

ELEPHANTIASIS ARABUM.

BY JOSEPH FAYRER, C.S.I., M.D., F.R.S.E.

Honorary Physician to Her Majesty the Queen; Physician to H.R.H. the Duke of Edinburgh.

SYNONYMS.—Morbus elephas; Bucnemia tropica; Elephantiasis indica; Spargosis; Hernia carnosa; Phlegmasia Malabarica; Egyptian sarcocele; Barbadoes leg; Cochin leg; Galle leg; Yam leg; Elephant leg; Glandular disease of Barbadoes

It is known in different parts of India as—

دآءآلفيل—Da-ool-feel (Arabic.)
فيل پاى—Feel-pai (Persian.)
هاتهى كا پاون—Hathi-ka-pahon (Oordoo.)
स्लीपदं—Sleepatham (Sanscrit.)
पादवल्मीकं—Panthavalumeekum (Sanscrit.)
Peerun-Kaal (Tamul.)
Munthu-Kaal (Malyalim.)
Motha-Kaaloo (Teloogoo.)
Kya-gyee-Na (Burmese.)

ITION.—A non-contagious disease, endemic in certain , generally intertropical, and near the sea-coast, characterised ecurrence of febrile paroxysms attended by inflammation a progressive hypertrophy of the integument and areolar tissue, chiefly of the extremities and genital organs; and occasionally by swelling of the lymphatic glands, enlargement and dilatation of the lymphatics, in some cases by the co-existence of chyluria and the presence in the blood of certain nematode hæmatozoa; the hypertrophy of the integument resulting in enormous enlargements of the extremities, scrotum or labia, accompanied by an albuminous deposit in the cells of the areolar tissue, and by degeneration of the muscular and osseous tissues.

NATURAL HISTORY.—It is endemic in India, the Malayan peninsula, China, Egypt, Arabia, the West Indies, parts of America, chiefly within the influence of the sea air—and probably, sporadically, all over the globe, perhaps excepting in extreme northern and southern regions.

Certain conditions of soil and climate, such as humidity, heat, malarious influences, and proximity to the sea-coast, seem to be concerned in producing and in influencing its development. It has been observed that removal from the territorial endemic area checks, whilst return there reproduces the disease.

It is totally distinct from Elephantiasis Græcorum (true leprosy), with which, the same generic term being applied to both, it is still sometimes confounded: they are as unlike in their symptoms as in their pathology, and really have nothing in common; though, as shown by V. Richards, they are occasionally co-existent in the same individual. Of 636 cases recorded by him in Orissa, forty individuals, or 6·29 per cent., were thus affected.

It seems desirable that a name founded on the pathological characters of the disease should be substituted for that now in use, to distinguish it from one with which it has no affinity. But the term Elephantiasis, derived from the fancied resemblance of the parts affected to the limbs of an elephant, is, if retained at all, more appropriate to this form of disease than to Elephantiasis Græcorum, or tubercular leprosy.

Bateman, however, in reference to this, says that the following distinction was drawn by Arabic writers, who described bucnemia as elephas, whilst leprosy was called elephantia; though here, again, there seems to be some confusion among terms by their translators.

The ordinary form in which the disease presents itself is hypertrophy of the integument and areolar tissue of some part of the trunk or limbs, and notably of the legs and genital organs. The skin becomes enormously thickened by hypertrophy of all the fibrous elements of its structure, attended by the deposit of a quantity of albuminous fluid in the cells of the areolar tissue. The papillæ are prominent and much increased in size. The integument is formed into hard masses or folds, with a rugose condition of the surface, not unlike the appearance of an elephant's leg. The feet and toes are sometimes almost hidden, and the scrotum or labia form enormous outgrowths, often attaining great weight in the male, accompanied by large hydroceles. From the male they have been removed weighing upwards of 100 lbs.

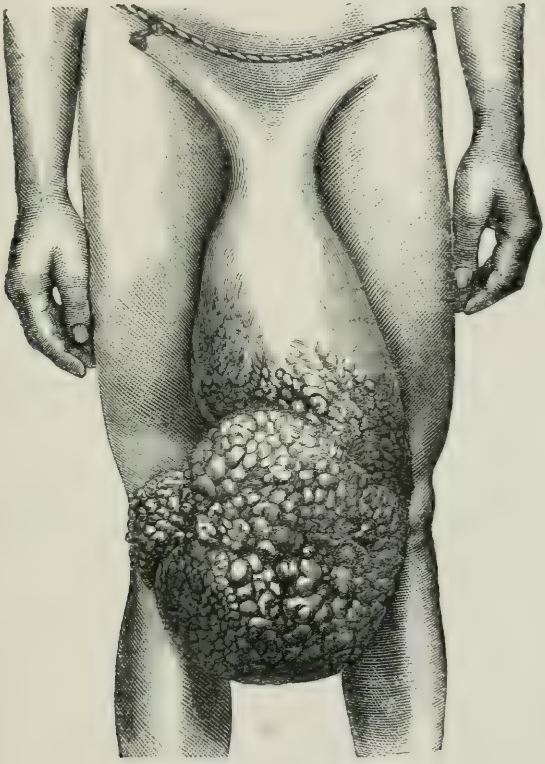

FIG. 1.

The appearance of such a tumour, where the disease has its chief seat in the integuments of the penis, is well shown in Fig. I. In some cases, these are the seat of a dilated and turgid condition of the lymphatic vessels, which during the periods of vascular excitement, when the febrile attacks occur, give way and discharge a chyle-like fluid; in others the surface assumes a temporarily herpetic condition which weeps an acrid and offensive serous exudation.

These outgrowths are the local expressions of a constitutional disease, and are not to be regarded merely from their local point of interest. They are the result of certain climatic influences whose exact nature is not at present determined; though, considering the geographical range of the area where the disease is endemic, it seems probable that, whatever other cause may be at work, the so-called malarious influences play an important part in its production.

The recent researches of Mr. T. Lewis into the pathology of chyluria in India, and his discovery of certain hæmatozoa in the blood of those affected with that disease, coupled with the fact that the subjects of chyluria and hæmatozoa are also frequently, if not always, affected by elephantiasis with its febrile paroxysms, hypertrophied integument and lymphatic disturbance, are not only very suggestive of a community of origin of these morbid conditions, hitherto regarded as different, but also tend to suggest an explanation of other imperfectly understood forms of tropical disease and cachexiæ.

The ordinary condition of elephantoid hypertrophy of the limbs or genital organs no doubt frequently exists independently of chyluria, of the presence of hæmatozoa, or of any obvious change in the state of the lymphatics; but their frequent concurrence, and the difficulty of detecting the parasites in many cases where they probably do exist, seem to indicate that further minute investigation of the subject may reveal a common origin of this disease with others due to the influence of tropical and malarious climates, and throw light on its relation to them.

It may be well, whilst recognising that hypertrophy of the integument may occur in other conditions, to limit the term Elephantiasis as now used, to the constitutional form of the disease that occurs within certain endemic areas, and which is manifested by paroxysmal febrile attacks, accompanied by a disturbed condition of the lymphatic system, chyluria, hæmatozoa, and progressive inflammatory hypertrophy of some portion of the tegumentary system.

There cannot be a doubt that cases occasionally present themselves not only in India and the tropics, but also in Europe and elsewhere, in which hypertrophy of the integument alone, or in combination with a greatly disturbed and dilated state of the lymphatics and glands, with or without a certain amount of constitutional disturbance, occurs; and although it may be so far correct to call such cases Elephantiasis, it should be borne in mind that they are more local in character than the disease with which we are familiar in malarious intertropical countries.

Elephantiasis affects both sexes, and persons of all ages and conditions of life. No race is exempt, but it is much more frequent, relatively, in the dark than in the fair races, and it appears that men suffer in a much larger proportion than women.

Waring says that of 945 cases observed in Travancore, 716 were males, or 75·76 per cent.; whilst 229 were females, or 24·34 per cent., or about 3½ males to one female. It must be remembered that prejudices against submitting females to treatment or examination exist strongly in the East, and may in some measure account for the disproportion.

It happens to all, from infancy to extreme old age, but is most common in adult and middle life; it comparatively rarely begins in a very young child or an aged person; the period of life between twenty and forty, being that most liable to suffer.

Some authorities deny that it is hereditary. Richards, who has carefully studied the disease in Bengal, says he is persuaded that hereditary predisposition is frequently a leading cause of its manifestation. Of 236 persons, 193, or 73 per cent., had one or both parents affected.

It not unfrequently occurs without much or any obvious injury to or disturbance of the general health during the intervals between the febrile attacks, which in some cases are few and slight. The appetite, spirits, and strength are good, the functions are all normally performed, and the only inconvenience is that due to the size and weight of the outgrowth. On the other hand, it is frequently quite the reverse; the rapidly recurring febrile attacks, the pain, exhaustion, suffering, and visceral complications, induce a state of cachexia and debility sometimes so serious as to render even surgical interference impracticable. Withal, it should be stated that hepatic and splenic enlargements do not as a rule result from the persistence of the elephantoid fever alone, though not unfrequently, as a more direct result of malarious poisoning, they seriously complicate the evils of the sufferer's condition. It should be noted that albuminuria, as well as chyluria, is occasionally present.

In some cases, after the outgrowth has attained a certain bulk, it ceases to grow altogether, or increases slowly and insidiously without febrile disturbance, and in such cases the general health remains good, but there is generally a tendency to recurrence of the fever once or twice a month; when the parts affected become tense, hot, painful, and swollen, and often discharge a serous or lymph-like fluid, which may be acrid and offensive. Some tumours, on the other hand, are very slightly, if at all so affected, and remain perfectly dry.

In all cases, however, some growth goes on, and even when, as occasionally happens, fever has ceased to recur, there may be a gradual, but slow and painless increase of the hypertrophy. The greatest variety and uncertainty obtain in the duration and progress of the growth; sometimes it is very rapid, at others it is slow, with intermissions of activity and indolence of development.

According to Richards, the average duration of the disease, as deduced from the observation of 636 cases, was 11½ years, and he notes that the earliest age was nine years, whilst the latest at which he observed it was eighty years.

It appears from this that the disease has little influence in shortening the duration of life. Richards further remarks that the period at which it first appears is by no means limited, though it principally attacks persons between the ages of fifteen and forty years, and that he had never known an infant to be attacked. It must be noted, that experience proves that young infants are not exempt, though in them it is rare.

In certain cases there is some reason to believe that it interferes with the procreative powers, not only mechanically, but by the cachexia and debility induced. Men, however, who have long been incapacitated, have become fathers after removal of the tumour, and there seems no ground for concluding that the presence of the disease elsewhere than in the genitals, unless it be accompanied by exhaustion and debility, causes failure in the generative powers in either sex; though it would seem that some women have a tendency to miscarry when suffering from elephantiasis.

Various causes are assigned for the disease in the regions where it prevails. Air, water, food, and, as it is frequent near the sea-coast, eating fish have been frequently credited with it. The presence or vicinity of certain forms of vegetation, the geological formation of the soil, have each and all been regarded as predisposing and determining causes, but not with sufficient reason. Climate and locality, combined with bad living, are doubtless the real predisposing causes; and it is probable that, as Mr. T. Lewis has suggested, like other unhealthy conditions observed among persons residing in tropical climates, especially those implying disturbance of the lymphatic system, it may be found to be intimately associated with the presence in the blood of certain parasites.

Mr. Lewis describes the *Filaria sanguinis hominis* as a small nematode entozoon, often exceedingly difficult to detect, and sometimes found in great numbers in the blood of persons suffering from chyluria and elephantiasis. This Filaria is inclosed in a tubular sheath, within which it elongates or shortens itself; the average diameter is about that of a blood-corpuscle, and its average length about forty-six times that of its greatest width, *i.e.*, its diameter is about $\frac{1}{3500}$, and its length $\frac{1}{75}$ of an inch. It varies, however, slightly in size. It approximates more closely to *Filaria medinensis* in embryo than to the larval stage of *Trichina spiralis*, though much smaller than either, especially in breadth.

It is impossible not to recognise the important bearing that these researches of Mr. Lewis have on the causation and pathology of elephantiasis, chyluria, and disordered conditions of the lymphatic system, in referring them etiologically to a common origin.

Further investigation may probably not only confirm these views, but throw fresh light on the subject, and may perhaps show that the disease is endemic in certain districts, because it is there that this particular Filaria is indigenous, and because, for similar reasons, the blood of the indigenous residents is fitted to be its habitat.

Dr. A. Webb believed that in some cases the disease had a syphilitic origin. This view, however, has not met with much support, nor is it founded on any very convincing evidence. As to its malarious origin it may be said that whilst the disease occurs in those regions where malarious poisoning prevails, it is not always most prevalent where paludal fevers are most severe, and that though frequently complicated with, elephantoid fever is not actually identical with malarious fever. It seems probable that its occurrence, as in the case of dysentery, goitre, and other forms of disease, may be in some way determined by those causes that give rise to intermittent fever, such as we are wont, failing a more precise definition, to call malarious.

The subjects of this elephantoid fever, at least in India, are very strongly impressed with the belief that it is due to lunar influences, and have the firmest belief that the paroxysms are synchronous with and dependent on the changes of the moon; as it undoubtedly does frequently happen that the febrile accessions and excitement of the local changes take place coincidently with lunar changes, it is not strange that a notion which is of such universal acceptance among certain classes, as the influence of the moon on vital action, whether in disease or health, should find favour where there is such apparent ground for believing in it. Such at any rate is the case, however, and one might as well try to persuade the sufferer that he had no fever at all, as that it was not so determined.

No race is exempt from the disease, but, whatever may be the explanation, the white suffer less than the dark races. It does occur occasionally, though very rarely, in the pure European in India, but more frequently in those of mixed descent; it will generally be found that where it occurs in persons of apparently European parentage, that there is a mixture, however slight, of dark blood. Waring says that the lower animals are not exempt; and even birds have been known to suffer from a swelling of one or both legs, which, though unaccompanied by fever, was in all respects similar to the hypertrophy of elephantiasis.

The disease occurs in different forms and in various degrees of severity. In some the attacks of fever are of repeated recurrence, from intervals of a fortnight to that of months ; the increase of hypertrophy in the limbs or genital organs being rapid. In others the febrile paroxysms are irregular, of slight intensity, and the growth of the hypertrophy is slow and less pronounced.

Long intervals of quiescence, varied by occasional increase of the swelling, with very little manifestation of a febrile tendency, occasionally occur, and in certain cases there is continuous increase unattended by any obvious disturbance of the general health.

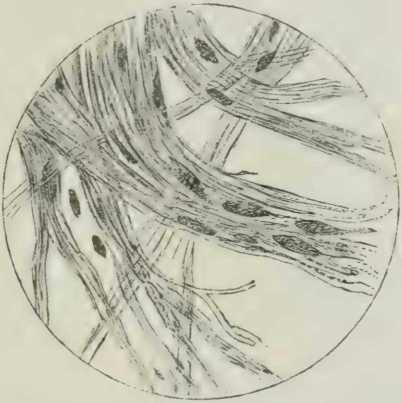

FIG. 2.—Microscopic appearance presented by a fragment after prolonged immersion in glycerine—showing areolar tissue (chiefly) in a hypertrophied condition. Magnified 300 times.

The hypertrophy in most cases appears to be simply an increase in the natural elements of the part, the blood-vessels and lymphatics sharing in the growth. The accompanying engravings represent the microscopical structure of the tumour shown in Fig. 4, and which was most kindly examined for me, by Mr. T. R. Lewis. In others the lymphatics and lymph spaces are most concerned, giving rise to a condition that has been described as nævoid elephantiasis, in which the appearance of a soft and fluctuating swelling, which when punctured gives issue to a white or pinkish fluid, very closely resembling chyle, is presented. The lymphatic glands also share in the enlargement. In other respects the progress of this is like that of the ordinary form of the disease. In the majority of cases of scrotal elephantiasis, one of the earliest symptoms is the formation of hydrocele.

In certain cases occurring in Europe the increase in size of the lymphatics occurs without more marked constitutional disturbance than occasional fits of excitement in the part, accompanied by increase of temperature and discharge of chyle-like fluid from the distended and attenuated vessels, the loss of which, when profuse, as it sometimes is, causes considerable exhaustion. These cases, though perhaps not identical with, are very closely allied to, true elephantiasis.

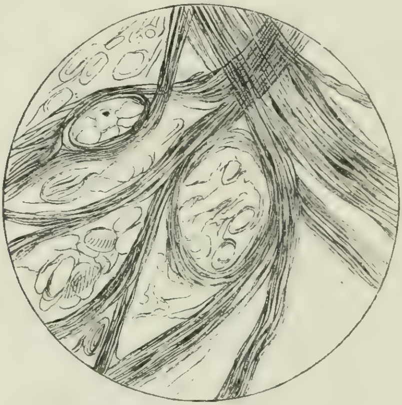

FIG. 3.—Appearance of another fragment stained in a solution of aniline and glycerine, dilute acetic acid being subsequently added. In the midst of the fibrous tissue the more or less transversely cut fibres of non-striated muscles are seen. Magnified 500 times.

TREATMENT.

The treatment of elephantiasis is both medical and surgical. But little impression has as yet been made by constitutional treatment. Remedies, though useful during the febrile paroxysms, in moderating their severity and the excess of local action, have little power in preventing recurrence or in checking the onward progress of the disease.

Preparations of iodine, in combination with quinine, arsenic, and iron, have all been found useful to a certain extent. During the febrile state salines, diaphoretics, and such remedies as are needed during the pyrexial state of malarious fevers, are indicated. The internal use of opium in some form may be necessary to relieve the intense pain which often accompanies the onset of the stage of excitement, when the suffering in the spermatic cords, testes, and generally in the lumbar regions is sometimes so intense, combined with the depression caused by nausea and retching, as almost to prostrate the patient from exhaustion.

The local application of iodine or some of its preparations, by inunction or otherwise, of such forms as the iodide of lead or the biniodide of mercury, have been thought to be useful; but as they are generally applied in conjunction with pressure when the patient is kept in a recumbent posture, the benefit is probably quite as much, if not more, due to the mechanical action of posture and pressure, as to drugs.

A due combination of local and constitutional remedies, with rest, improved diet, and changed, *i.e.*, improved, hygienic conditions, may, and no doubt do, materially control the progress of the disease and relieve suffering. No remedy, however, is so potent as change of climate, by removal from the endemic site of the disease. This, if effected in the earliest stages, may completely arrest the disease, and perhaps, but this is doubtful, even disperse any incipient structural change that may have occurred.

This has occasionally been observed in the rare cases in which it happens in Europeans, that returning to Europe, they have after a time lost the disease, and almost, if not entirely, any hypertrophic changes that may have occurred. Natives of India improve, and the disease often ceases to progress, if they leave the endemic area during the early stages and go and reside in other and drier localities. Such a change, for example, as from Calcutta to Delhi, in the case of a native of Bengal who is affected, is often effective in arresting, if not in curing, the disease. It is constantly observed, however, that after the hypertrophic condition has become advanced, the paroxysms of fever are still liable to recur, even when the climate is changed, though they do so with less violence, showing that the tumour itself acts in some way as the source of a dyscrasia that perpetuates the recurrence of the febrile state, which ceases altogether after it has been removed. This, where the disease affects the genital organs, is possible. When the limbs are the seat of the disease, the practice is not applicable.

The onset of elephantiasis is frequently violent and attended with great suffering. There is high fever, intense pain in the lumbar region, the groin, the spermatic cords and testes, which become much congested and swollen, and acute hydroceles form. This is often attended with sympathetic vomiting, nausea, rapid and erythematous swelling of the external parts; and if the extremities be attacked, the swelling is often very tense and painful, accompanied by much effusion into the areolar tissue. The surface of the integument is much inflamed, and sometimes discharges a serous ichor or chyle-like fluid, according to the extent to which the lymphatics are engaged in the particular case. There is much constitutional disturbance, increase of temperature, and often depressing nausea and vomiting when the cords are implicated. In these the great tension and swelling of the cords is apt to dilate the abdominal rings so widely, that when it subsides after recovery, the patient is liable to suffer from hernia through the widened inguinal passages.

During the fever and excitement, salines and aperients, with local soothing applications, fomentations, and often opiates, are necessary to relieve pain and give rest. When this stage has passed, quinine is useful, which if anæmia exist should be combined with iron, which may be all the more necessary if other indications of malarial cachexia be present. A variety of tonics have been recommended, but there is no reason to believe that beyond their general action as tonics and antipyretics or febrifuges, they have any special action on the disease. Richards thinks that he has seen benefit result from confining certain natives of Orissa to a milk diet; but it is to be feared that even this simple form of treatment will not generally succeed.

It is impossible to overestimate the importance and value of change of climate; in the case of Europeans this should be to

Europe, in that of natives of the country to a district where the disease does not prevail—beyond damp and malaria as much as possible; and in addition all measures should be resorted to that can tend to improve the general health and the condition of impoverished blood which no doubt exists.

Surgical treatment, where the hypertrophy is advanced, is often most successful in relieving the sufferer not only of the local trouble, but also of the fever, which ceases when the outgrowth is removed, for it would seem that the outgrowth acts as a source of dyscrasia keeping up the recurrence of fever as long as it itself remains.

Tumours of the genital organs, sometimes of enormous size, are now removed with complete success, and, considering the formidable character of the operation and the magnitude of the mass—which has occasionally exceeded 100 lbs. in the male —with comparatively small mortality.

The removal of a scrotal tumour is effected by incisions along the course of the cords and the dorsum penis. The lines of incision are shown in the accompanying engraving (fig. 4). The cords, testicles, and penis are turned out by a few touches of the knife, and then reflected and held up on the abdomen, while the mass of the tumour is rapidly swept away by a few bold incisions in the perinæum. The removal should not occupy more than 2½ to 3½ minutes, unless any complication should arise from adhesion of the tubes to cicatrices, such as are often caused by the application of the moxa, which is a favourite native method of treating the disease in the early stages.

The numerous venous and arterial bleeding points should then be arrested by ligature or torsion, and the surface of the wound dressed with simple oiled lint covered with antiseptic dressing.

No attempt should be made to preserve flaps of integument either for the penis or testes. It is unnecessary, and almost certain to be followed by recurrence of the disease. The process of cicatrisation goes on rapidly, and in from two to four months all is closed in by cicatrix tissue, which gradually perfects itself with time, and has no liability to become the seat of a return of the disease.

Before commencing the operation, especially in the case of a large scrotal tumour, it is well to drain it of blood by placing the patient on his back, elevating the tumour in the abdomen for an hour or so before the operation, during which time pressure by a bandage (a modification of Esmarch's) may be tried, and cold (ice) may be applied. During the operation the application of a whipcord ligature drawn tightly round the neck of the tumour prevents loss of blood, and it is very important that not more blood than can possibly be helped should be lost from the numerous bleeding points which are seldom controlled with fewer than twenty to thirty ligatures, often more. The shock of the removal of so large a mass is often severe, and causes anxiety. The patient should in such cases be left on the table until reaction has thoroughly set in, and care should be taken that at or soon after this period, no hæmorrhage should occur from small vessels which during the operation may, from not bleeding, have escaped notice.

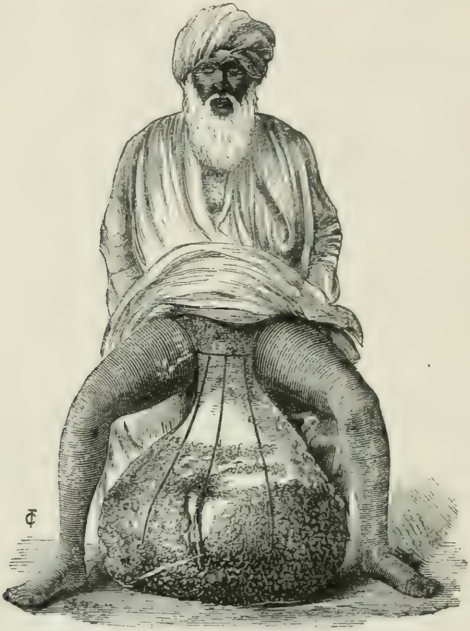

FIG. 4.

In thin persons the abdominal tourniquet may be applied.

The process of healing occupies from two to four months, but when complete is very satisfactory. The genital organs are covered and protected, and the relief to the sufferer, who had for years been encumbered with a tumour of perhaps thirty to sixty pounds weight, may be imagined! The procreative powers are also frequently restored. Of 193 cases of scrotal elephantiasis operated on in the Medical College Hospital in Calcutta between 1859 and 1871, thirty-five, or 18·2 per cent., proved fatal, the causes of death being pyæmia, embolism (cardiac and pulmonary plugging), diarrhœa, tetanus, shock. Many of these deaths were due to insanitary conditions, and probably would not have occurred under more favourable circumstances.

The tumours removed varied in weight from two or three pounds to 110 lbs. The ages of the patients ranged from 20 to 50 years.

It has been suggested that elephantiasis of the limbs may be treated by ligature of the main artery. It is difficult to understand on what physiological principle this mere temporary starvation of the limb should have any efficacy in permanently removing the local expression of a constitutional disease. That it might temporarily ameliorate it, there is no reason to doubt, but the same effect could be produced by pressure on the limb or its artery, or by continuance in the recumbent posture; and such, indeed, has been the result of experience in certain cases in India. Ligature of the femoral artery, which was necessarily accompanied by protracted rest in bed, the application of bandages, and the general diminution in size that would follow such an ordeal, were followed by a considerable reduction in the size of the leg. The improvement, however, was temporary, and the disease returned to its original dimensions on the patient's resuming the usual mode of life.

There is probably not sufficient reason on any sound physiological principle for expecting permanent improvement in the case of true elephantiasis by merely temporarily arresting the flow, and subsequently altering its channel of distribution in the limb through the anastomotic circulation to warrant the performance of so serious an operation as ligature of the main artery, and as has been stated, the results of ligature of the femoral artery for elephantiasis of the leg failed in Calcutta to produce any permanently good result. It is not supported or confirmed by experiment.

ON THE DIFFERENCES OF ACTION OF INDUCED AND CONTINUOUS CONSTANT CURRENTS ON THE MUSCULAR SYSTEM, FROM A CLINICAL POINT OF VIEW.

BY DR. ONIMUS, OF PARIS.

(*Continued from* vol. xiv. p. 419.)

IMPORTANCE OF THESE FACTS AS A MEANS OF DIAGNOSIS.

WITHOUT dilating on this question, to which the greater number of authors have called attention, and which we have fully considered elsewhere, we may remark that from the moment that we establish in any paralysis the occurrence of difference of contractility for the two kinds of currents, it may be positively stated: (1.) That the intra-muscular nerves are damaged. (2.) That the muscle is not atrophied, as the application of induced currents might lead one to suppose; but, on the contrary, that the muscular fibres are preserved, and that they have undergone only a slight alteration, which will be rapidly recovered from as soon as the nerves are regenerated.

In these cases it is certain that the lesion has primarily affected the motor nerves, and as this loss of contractility never takes place in affections of the central nervous system, or at least of the brain, the conclusion may be drawn that it is an affection of the nerve itself. The affection may occupy several parts of the nerve—either its point of origin alone, or its course, or its terminal filaments. The longer or shorter period required for the phenomena described to develop, will serve to indicate the point affected, so that, *cæteris paribus*, the more distant the primary affection is from the muscles, the longer is the time required between the appearance of the paralysis and the loss of farado-muscular excitability.

On the other hand, increase of galvano-muscular excitability indicates that the nerve-lesion is confined to the motor nerves.

It has been already stated that in peripheric paralysis of the facial nerve these phenomena present themselves quickly, and in all instances: of that there can be no doubt whatever. In many cases, it is true, the paralysis is slight and transient, but even in these cases there is always a difference between the excitability of induced and continuous currents. Induced currents may not lose their action, but continue to excite contractions; but these contractions are more difficult to excite than on the sound side. And in the same way the excitability for continuous currents may not be very greatly augmented, but it will still be more marked than on the healthy side.

In slight cases of rheumatic facial paralysis that have fallen under our observation, we have always observed five to seven days after the commencement of the affection, a difference in regard to farado-muscular and galvano-muscular contractility. In our opinion all the cases of facial paralysis that have been considered peripheric, and that have been reported as paralyses of this kind, in which the farado-muscular contractility was completely preserved, ought to be regarded as paralyses of cerebral origin. In patients in whom these phenomena are presented, in spite of the absence of other symptoms and the opinion of other physicians, we have always rejected the diagnosis of peripheric paralysis, and subsequent events have demonstrated the accuracy of our views.

We desire to draw attention to the following observation, which shows how effectively electricity may be employed in establishing a diagnosis:—A workman engaged in a foundry, while exposed to a high temperature, suddenly experienced a sensation of cramp in the left side of his face; the sensation passed off immediately, but the muscles of this side remained paralysed. He had not felt any dizziness, nor vertigo, nor loss of consciousness. He came under our observation two days afterwards, and with the exception of paralysis of the muscles of the face, had no complaint to make. We diagnosed a peripheral paralysis of the facial nerve due to the influence of change of temperature.

On examining the electrical condition, no alteration could be detected between the two sides of the face, at which, however, we were not in any way surprised, as it was only the second day of the affection.

On the day following the contractility was still the same; that is to say, induced currents produced strong contractions on both sides, and with continuous currents the same strength of current was required. We began to doubt our diagnosis, especially as there appeared to be slight impairment in the movements of the ocular muscles; but the patient declared so positively that he observed no change in his vision, that we passed lightly over these phenomena, especially as the improvement was already well marked, and we believed it to be a very slight case of peripheric paralysis, the rapid recovery from which did not allow either the muscles or the nerves to undergo appreciable alteration. Ten days after we saw the patient again, and then found that some muscles, especially those of the upper part of the face, remained paralysed, but without presenting any change in regard to their galvano-muscular and farado-muscular contractility; this fact alone led us to reject our former diagnosis, and we were compelled to admit a centric lesion. On close inquiry the patient admitted slight impairment of vision. M. le Dr. Camuset, who examined him at my request, recognised the symptoms of a paresis affecting several muscles of the eye. On the left side there was insufficiency of accommodation manifesting itself by an inability to read at the same distance as with the right, but this symptom did not continue after this date. On the right a much more marked phenomenon occurred, which consisted of a diplopia appearing when the object looked at was on the right side of the patient. When a red glass was placed over the right eye and a lighted candle was moved in front of the patient at a distance of about three yards, two images were perceived as soon as the light was moved beyond the median plane of the body towards the right; the red image was to the right, the white to the left, the distance between which gradually increased to about a foot when most separated. *Homonymous* diplopia, increasing to the right, is symptomatic of more or less complete paralysis of the sixth pair, or external oculo-motor nerve; but this paresis was difficult to diagnose at first sight, for the eyes had preserved their symmetrical mobility almost perfectly on the two sides.

This complication implicating the movements of the eyes is a positive proof of a centric affection; and we felt that we had before us just one of those cases of which the lectures of M. Charcot, "Sur les Affections du Bulbe," might afford us aid in determining the seat. Some very limited lesion ought in fact to have existed in the upper part of the medulla oblongata, where the origins of the facial and sixth are in close proximity.

The patient has now recovered, but if the examination of the electrical contractility had not supplied a very certain sign, we should perhaps, without much hesitation, have included this case amongst those peripheric paralyses, in which farado-muscular contractility is preserved and which rapidly recover. Moreover, we entirely changed our first prognosis, for the prognosis is very different and more serious in a case of this kind, even when complete recovery takes place, than in a case of peripheric paralysis, though this may have recovered more slowly and less completely.

CAUSES OF THE DIFFERENCE IN THE EFFECTS PRODUCED BY INDUCED AND BY CONTINUOUS CURRENTS.

We have already referred to the physical differences which distinguish induced from continuous currents: and have nothing further to say upon this point; it will be sufficient to indicate here to what differential property the difference of excitation of these two kinds of currents is owing.

We know that the induced current is always of extremely short duration, whilst the continuous current acts for a relatively much longer period. The majority of authors attribute the difference of action of induced and constant currents to this cause. Neumann was the first to make these investigations, and he observed that if the currents proceeding from a battery are rapidly broken, the contractions are much feebler than when the current is more continuous, and that they disappear entirely when the interruptions are very rapid. Thus, in the cases where the muscles do not contract by induced currents, whilst they preserve their excitability for continuous currents, it would appear to be due to the short duration of induced currents.

This proposition is in great part true; but we do not believe that it is the sole condition which determines the difference of action between induced and continuous currents.

We have seen, in fact, that the duration of the current may be increased without more action being obtained. In employing Clarke's apparatus, and turning the electro-magnet slowly, we produce induced currents the duration of which is less; and during the application of this current no result has been obtained when applied to paralysed muscles (facial paralysis). We have in a similar way employed the current produced by Ladd's apparatus, which when applied to the muscles of the limbs or to those of the face, when healthy, causes very energetic contractions, but does not cause the least contraction when applied to paralysed muscles.

In order to study the influence of the duration of the current with continuous current machines, we have made use, in the foregoing experiments, of the toothed wheel of Masson; but this plan has its defects, for the contacts are not always very exact; and as the wheel has to be rotated with the hand, it is not certain that the velocity is uniform. The results we have obtained by these means may therefore be erroneous. But since they were employed our experiments have been made with greater exactness, in consequence of our having adopted an apparatus with regular interruptions that we have had constructed for our studies on the pneumogastric.

This apparatus is capable of giving twenty interruptions in the second, and we have had numerous opportunities of verifying the following facts:—

The number of interruptions per second required to produce permanent contraction of the muscle is greater or less, according to the degree of paralysis present, and the period of the duration of the affection.

Thus, in order to obtain permanent contraction or tetanus of a healthy muscle, nearly twenty interruptions per second are required, whilst in paralysed muscles tetanus supervenes with eight, and even with six or five interruptions per second. In proportion as the paralysis becomes more marked, a less number of interruptions is required; and on the other hand, when recovery has taken place, a greater number of excitations is required to produce tetanus.

This is easily conceivable, since, as we have said, the form of the contraction changes; it becomes slower, and the muscular shock has not time to be accomplished as rapidly as by healthy muscles.

Tetanus of these paralysed muscles is not so energetic as that of healthy muscles—that is to say, the shortening of the fibres is much less pronounced. This feeble degree of shortening, as well as the absence of a succession of shocks, often makes it be believed that there is an absence of contraction. This is an error that many authors, and that even we ourselves, have fallen into. Thus, with ten or twelve interruptions per second, the continuous current being employed, no effect appears to be produced, because the muscle appears to be perfectly quiescent during the passage of the current. It has hence been concluded, and we have ourselves concluded, that when the number of interruptions exceeds twelve per second, the duration of the current was too short to determine contractions. But this immobility of the muscle is only apparent, for it is due to the fusion of the successive shocks, which however do not attain the degree of shortening that occurs in the tetanus of healthy muscles. The tetanus of paralysed muscles is very feeble, and in fact is scarcely perceptible, except at the moment that the current is made and broken.

The interruptions of the continuous current must indeed be rapid if no effects are to be produced upon the muscles by it. But the point which is brought out in these researches is, that whilst the muscular shock of healthy muscles does not last longer than seven or eight hundredths of a second, it lasts from twelve to twenty hundredths of a second in paralysed muscles.

These phenomena of contraction evidently indicate an abnormal state of the striated muscular fibre—a modification of its structure and function.

In addition to the conditions that we have already described, the alteration of the intra-muscular nerve filaments and the preservation of the healthy condition of the muscular fibre—

conditions which are necessary to occasion the absence of farado-muscular contractility and the augmentation of galvano-muscular contractility—the following must also be mentioned:—1. Slow succession of interruptions of the galvanic current, and a sufficient duration of each excitation. 2. A modification of the striated muscular fibre which assimilates it to smooth muscular tissue, and in general to that of other contractile substances.

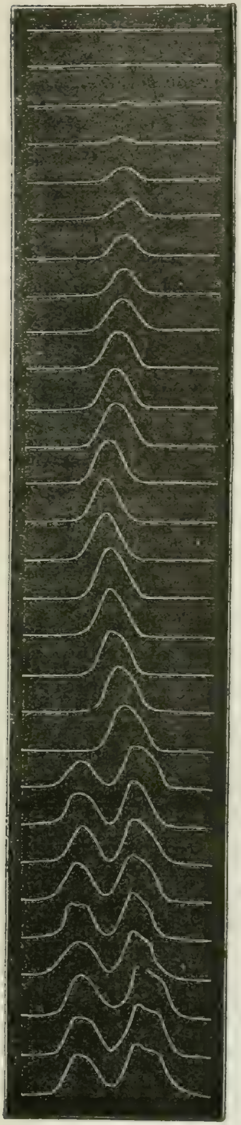

FIG. 1.

We have been able to reproduce some of these phenomena by way of experiment, and Fig. 1 is very instructive in this point of view.

We have caused a current proceeding from five small Daniell's elements to pass through the muscle of a frog, the contraction being registered on a registering cylinder revolving with mean velocity. The interruption of the current took place at each turn of the cylinder, and produced, as is seen in the nine lower lines on the figure, a contraction on the opening, and a second contraction on the closure of the current.

In proportion as the muscles become exhausted, only a single contraction occurs, and finally even this disappears. It may at the same time be observed in these tracings that in proportion as we ascend to the higher lines the commencement of the contraction is retarded.

In the three upper lines there is no longer any contraction; but if the velocity of rotation of the cylinder be retarded in such a manner that the period which intervenes between the opening of the current and its closure is prolonged, the contractions immediately reappear. The absence of contractility is not due to the fatigue of the muscle alone, since on prolonging the interval between the periods of excitation contractions are produced, but is owing to the circumstance that at this period of muscular fatigue the exciting agent must act for a longer time. At the same time the molecular changes which bring about dynamic effects take place more slowly, and this is just the character that we have met with in cases of facial paralysis.

Induced differ from continuous currents both in tension and in quantity. Induced currents have enormous tension, but are small in point of quantity; whilst the contrary obtains in regard to continuous currents. This difference, as we have observed, influences their mode of excitation in the cases of paralysis that we have just investigated; it may be said generally that tension has *less* marked influence on paralysed than upon healthy muscles, whilst quantity has *more* action on paralysed than upon healthy muscles. With the same battery, if the surface of zinc be augmented which increases the quantity, the contractions become more energetic. With twenty-eight elements, if only a very small part of the zinc be introduced into the exciting liquid, we cause less strong contraction in paralysed muscles than when we employ a current of fourteen elements with the zinc completely immersed.

B.—*Not only do continuous currents cause the contraction of muscles when these no longer contract with induced currents, but a less powerful current is required to produce this contraction than is required to cause contraction in the homologous healthy muscles.*

The difference of reaction of the muscles in certain cases of peripheric paralysis for the two kinds of currents is certainly a most curious fact, and astonishes most physicians and physiologists, especially those who have always considered the action of induced and continuous currents as identical.

But if these phenomena admit of explanation it is more difficult to determine why continuous currents acting on these paralysed muscles, which no longer respond to induced currents, should not only cause them to contract, but should cause them to contract more energetically than healthy muscles. In accordance with the electro-motor force, from ten to twenty elements are required to cause the muscles of the face, when healthy, to contract; whilst when these very muscles are paralysed, only five, and sometimes only two elements are required; and when the muscles are exposed, it often occurs that one element is sufficient to induce contraction.

It is erroneous to say with certain authors that the contractions are stronger here than in healthy muscles; they are, on the contrary, always less energetic; the point is, that they require a current of less intensity to produce them. If it be borne in mind that in these cases there is destruction of the intramuscular nervous filaments, and in consequence an absence of excitability through the nerves, we are led to the logical conclusion that idiomuscular contraction is determined by a feebler stimulus than is required to produce contraction indirectly through the motor nerves.

Without entering further into the particulars of these phenomena, we may remark that all these facts concur in showing that the contractile substance of striated fibres in these cases of paralysis resembles smooth muscular fibre, or that which is called protoplasm. Its contraction is slow, and it remains persistently contracted throughout the whole of the time that the current is applied, and it returns but slowly to its normal state.

It is a fact of great physiological importance, however, that continuous currents have a much more marked action upon smooth fibres than induced currents, and to provoke the contraction of the unstriated fibres a current of much less intensity is required than for striated muscles. In the experiments we have made on the contraction of the intestine, we have observed on several occasions, both with the manometer and with the registering apparatus, that when contractions can no longer be obtained with induced currents, they are still produced by continuous currents.

The trace (Fig. 2) represents the contraction of the small intestine of a dog shortly after death. The application of induced currents, either directly to the intestine or to the mesenteric nerve, produced no effect; whilst on electrifying these nerves with induced currents, the well marked contraction shown at *a*, Fig. 3, took place. On applying one of the poles to the nervous plexus, and the other to the intestine, some peristaltic contractions even occurred.

We have already pointed out the analogy that exists between the contractions of the muscles of animal life in these cases of peripheric paralysis, and the contractions of the muscles of vegetative life; this analogy is still further borne out by the fact that whilst the striated muscles only contract at the moment of closing and of opening the current, remaining relaxed during the intermediate period, smooth fibres present a more or less considerable shortening during the passage of the current. In other words, the same thing takes place as in striated muscles in the case where there is augmentation of the galvano-muscular contractility.

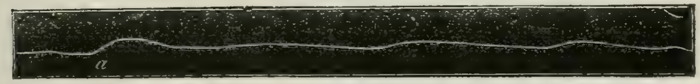

FIG. 2.

Lastly, we have seen that the muscles of the face atrophy very slowly after paralysis of the nerve, and the same holds good for the smooth fibres. These fibres also atrophy slowly; they diminish in number and volume without completely disappearing, and those which remain preserve their contractility. The uterus, even after years of repose, still contains fibre-cells. The seminal vesicles of old men and of paraplegic patients still present smooth fibres.[1]

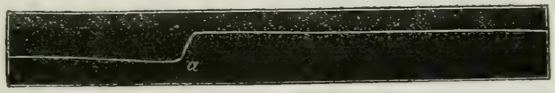

FIG. 3.

A very well-marked analogy then exists between the smooth and the striated fibres, when the latter are no longer in connection with nerves. It is said that the striated fibres return by insensible gradations to their embryonic condition, for the properties of smooth muscles resemble those of striated muscles in their embryonic state. We have, in point of fact, noticed that in the case of the muscles of embryos, both continuous and induced currents excite contractions for a short time; but the excitability for induced currents rapidly diminishes and passes off, whilst it remains for some time for continuous currents. At the same time contraction produced by continuous currents is persistent, remaining during the whole period that the current is applied.

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[1] Ch. Legros and Onimus, "De la Contraction des Muscles de la Vie Végétative," in the *Journal d'Anat. et de Physiol.* 1869.

These facts help in great measure to explain the augmentation of excitability by continuous currents, for it is easily intelligible that, as soon as the contractile substance of the striated muscles changes its characters, it responds differently to excitants. As it approximates more and more to the smooth fibres, it assumes their properties, and, like them, contracts under the influence of feeble currents.

By the side of this explanation ought perhaps to be placed the fact that the muscles are more readily excited by all stimuli whenever the nervous system is weakened. It is on this account that fibrillar contractions are observed on very slight mechanical irritation after serious attacks of fever, neuritis, and the like. In these cases, each of the fibres acquires a kind of independence which permits it to contract separately and on the slightest irritation; the muscles may even contract of themselves, as is proved by the fibrillar contractions that occur in all adynamic diseases. However this may be, all these facts demonstrate, from a pathological point of view, the energetic action of induced currents on the peripheric nerves, their special action on the intra-muscular filaments, and in consequence their utility whenever it is desired to excite local contraction, or when it is wished to excite the functional action of the motor nerves, and indirectly that of the striated muscles. On the other hand, continuous currents act more particularly upon the muscular substance; they have a less lively but more penetrating action, and their influence is specially marked when we wish to excite the functional activity of the smooth fibres or that of the striated fibres, where, as occurs in pathological cases, these approximate in their characters to those of the smooth fibres.

(To be continued.)

ON THE TREATMENT OF THE DIARRHŒA OF TYPHOID FEVER.

BY GEORGE JOHNSON, M.D., F.R.S.

Professor of Medicine in King's College; Physician to King's College Hospital.

IN a short paper on the above subject which appeared in the January number of the *Practitioner*, I stated that careful and long-continued observation of various and opposite methods of treatment had led me to the conclusion that the most successful treatment consists in careful nursing and feeding with a cautious regulated use of stimulants when called for, and, as a rule, abstinence from active medication. I gave reasons for my belief that although the direct effect of opium is soothing, yet that when given in sufficient doses to render the intestines torpid, it acts indirectly as an irritant by retaining the putrid morbid secretions until they decompose and give off noxious gases, which distend and irritate the bowel, and thus increase and prolong the diarrhœa.

I gave reasons for not employing such drugs as mineral acids, which, in my opinion, must irritate the ulcerated mucous membrane of the intestines, causing pain and griping and increasing the diarrhœa.

Lastly, I stated that I had found reason to believe that the diarrhœa of typhoid fever is often increased by the patient's inability to digest the beef tea and eggs which are sometimes too abundantly given. I have often observed that the frequent passage of liquid fœtid stools is speedily checked by discontinuing the beef tea and eggs, and feeding the patient for a time exclusively on milk either with or without wine or brandy. As evidence that this treatment of fever cases is not unsuccessful, I mentioned the fact that during the previous year I had had under my care in the hospital fifteen cases of typhoid fever and fourteen cases of typhus, and that not one death had occurred.

In the *Practitioner* for June, Dr. Henry Kennedy comments on my paper, and expresses his belief that "it embodies a doctrine which is most questionable, and in every way open to discussion." Be it so. I am not about to enter into a controversy with Dr. Kennedy, but I beg to suggest that his objections to my method of treatment would have more weight if he could have said that he had fairly tried it and had found it unsuccessful. In the absence of such experience I venture to say that his adverse judgment is worth very little. I have at any rate this advantage over him, that I have myself tried and have seen others follow out the methods of treatment in which he places his trust, and I have abandoned them because I have found them worse than useless. As I stated in my former paper I do *not* trust entirely to diet and good nursing. I give alcohol in various forms, chloral, quinine, and even opium when required, but not as a matter of routine or without a clear indication of their necessity.

There is but one objection raised by Dr. Kennedy which I consider to have any weight, and that is his statement that the fact of fifteen recoveries occurring in succession affords no proof that the treatment was successful—the numbers being too small to have any value as evidence. To meet this objection our Medical Registrar, Mr. Batterbury, has done me the favour to look through our records and extract for me all the cases of typhoid and typhus fever that have come under my care in the hospital during the last five years, from the beginning of the year 1870 to the end of the year 1874. The result is that there have been during that period sixty-three cases of typhoid with three deaths, and twenty-six cases of typhus with one death. As I have before stated I attribute this very satisfactory result mainly to the admirable nursing which our patients receive, and to our abstinence from all medication except such as is required to meet particular symptoms. In some of my cases the symptoms were of extreme severity. In one the temperature having risen above 107° life was saved only by the frequent repetition of the cold wet pack, which was administered with great skill and perseverance by the then House Physician, Dr. Bomford.

Everyone whose opinion is of any weight admits the supreme importance of careful feeding in cases of typhoid fever, not only during the progress of the fever, but also until convalescence is thoroughly established. It is not so generally known or admitted that the symptoms—the intestinal symptoms especially—are often aggravated by the irritant action of such drugs as mineral acids, and by the retention of fœtid morbid secretions when the intestines have been rendered torpid by opiates indiscreetly given to arrest diarrhœa. Whether any medicine has the effect of checking the outpour of morbid secretions from the bowel into the intestines, and what would be the effect of such restraint is doubtful. It is not doubtful that the artificial retention of foul liquids and gases within the bowel must be an unmixed and often a very serious evil.

ON THE USE OF QUININE AS A GARGLE IN DIPHTHERITIC, SCARLATINAL, AND OTHER FORMS OF SORE THROAT.

BY DAVID J. BRAKENRIDGE, M.D., F.R.C.P.E.,

Assistant Physician to the Royal Infirmary; late Physician to the Royal Hospital for Sick Children, Edinburgh.

Since Binz published his famous experiments, showing the action of quinine on the white corpuscles of the blood, numerous authorities have confirmed and extended his observations. The following facts, among others, may now be regarded as established:—

1. Quinine is a protoplasm poison, and limits the number and movements of the white blood corpuscles and pus cells.

2. It prevents the pathological migration of the blood corpuscles into the tissues of the membranous and parenchymatous organs exposed to the air, both when it is given subcutaneously and when it is directly applied to the part.

3. It restrains the dilatation of the blood-vessels.

4. It is an antiseptic, and exerts a paralysing, or, in larger doses, a destructive influence on microzymes.

With these facts in view, the theoretical appropriateness of quinine as a gargle in diphtheria with abundant proliferation of micrococci, and in scarlatinal, and various other forms of sore-throat, especially when attended with membranous exudation, pultaceous secretion, or ulceration, is apparent. For it antagonises all the visible factors of such forms of inflammation.

Before employing it for this purpose, I was familiar with the use of solution of quinine as a dressing in bed-sores and other tedious ulcers. The marked diminution in the secretion of pus and the rapid improvement which I observed to take place in these cases when so treated, first led me to anticipate good results from quinine as a gargle.

For the last four months I have treated every suitable case of sore-throat that I have met with in my wards in the Royal Infirmary and elsewhere, with a gargle composed, as a rule, of two grains of sulphate of quinine and five minims of dilute sulphuric acid to each ounce of water. Sometimes I have been able to increase the strength; sometimes I have been compelled to diminish it. When well tolerated, the stronger it is the better.

The results I have obtained fully confirm my favourable anticipations. From a considerable number of cases I draw the following conclusions:—

Simple non-syphilitic ulcers of the throat, under this treatment, at once assume a healthier aspect and heal rapidly.

In syphilitic ulcers, the local treatment has always been accompanied by the internal administration of iodide of potassium, or some other suitable constitutional remedy; but my impression is that, in these cases, the cure is hastened by the quinine gargle.

Its effect in the sore-throat of scarlatina is very marked, the pultaceous secretion being checked, and the inflammatory swelling diminished.

It is of comparatively little use in the early stage of cynanche tonsillaris, over which tincture of aconite, in minim doses frequently repeated, has so decided a control. When, however, abscess followed by abundant discharge of pus results, its beneficial influence in checking the suppuration and promoting healing is marked.

In the slighter forms of diphtheritic sore-throat it answers admirably, preventing the extension of the disease, and promoting the separation of the membranous exudation.

It is, however, in severe cases of true diphtheria that I hope it will prove most useful. I have now employed it in three cases of this disease, and in all the result has been highly satisfactory.

I select the following case, because it was one of unusual severity:—

Mrs. K., a widow, 25 years of age, previously healthy, passed an open drain on Feb. 5th; remarked the bad smell at the time, and said to her sister, "I am sure I have caught something." Complained of slight chilliness for several days until Feb. 9th, when she was seized with sickness, headache, vomiting, and rigors. Did not feel the throat sore until the 10th, on the afternoon of which day I first saw her. She was in the dining-room, dressed, and sitting on the sofa, and had a haggard and very anxious look. Pulse 140, very weak. Tenderness and swelling at the angles of the jaw, and down the lymphatic glands of the neck on both sides. Tongue furred, and breath very offensive. A foul, ragged, yellowish-grey patch, about the size of a florin, covered the right tonsil. The arch of the palate, uvula, and fauces were of a dark livid red colour. Ordered to bed, to take 10 grains of chlorate of potash every three hours, and to gargle the throat with Condy's fluid (a tea-spoonful to a tumblerful of water) every half-hour night and day. Milk, beef-tea, sago, and arrow-root to be taken freely.

Feb. 11.—Less anxious expression. Pulse rather firmer, 120. Diphtheritic patch cleaner-looking and less offensive; but has extended about two lines up towards the uvula.

Feb. 12.—A new patch has appeared on the left tonsil, and another at the back of the pharynx, and there is great pain in swallowing. Temperature 103°. Pulse 130. Bowels regular. Beef-tea and milk taken in considerable quantities.

Ten drops of tincture of perchloride of iron to be added to each dose of the chlorate of potash.

Feb. 13.—Very great pain in swallowing, chiefly on the right side, left and posterior patches extending, right separating. Uvula still free. Temperature 102·2°.

Feb. 14.—Still great pain in swallowing. Diphtheritic patches have extended considerably on the left side; that on the right tonsil has separated to-day. Pulse 120. Has been able to take a considerable amount of nourishment.

Medicinal treatment has been steadily carried out. Has slept between the periods of gargling pretty well up till to-day. Ordered three glasses of port wine in the day.

Feb. 15.—Had a restless night. Great pain in swallowing, and the food returns partially by the nostrils. There has been a slight discharge from the nostrils, with tenderness, from the commencement of the disease; it is now sanio-purulent, and acrid. The diphtheritic membranes are still very firmly adherent, and are gradually extending. They now cover all the posterior surface of the pharynx, extending on the left side over the tonsil and left side of the uvula. The right tonsil is clean, tender-looking, and presents a cup-like appearance where the false membrane has separated.

The following gargle was ordered to be used alternately with the Condy's fluid every half hour:—

R. Quiniae Sulphatis, gr. xviii.
Acidi Sulphurici diluti, ♏ xlii.
Aquam ad ℥vi. misce.

This at first produced retching, and had to be diluted with an equal amount of water. A gradual return was made in a few hours to the full strength, which was afterwards well borne.

Feb. 16.—Decided improvement. A good many portions of the false membrane have become detached during the night. Pulse 100, and of better strength. The tongue is cleaner, and the swelling of the throat is much less. The swellings at the angles of the jaw have quite fallen, and the throat altogether looks better. Patient attributes the improvement to the new gargle; has had a good night. She fancied and enjoyed a cup of tea this morning for the first time.

Nine o'clock, p.m.—A good many shreds of false membrane have become detached during the day, and the whole affected surface looks healthier. Considerable pain attended the separation of the sloughs during the afternoon. Temperature 100·4°. Pulse 108.

From this date the throat symptoms steadily and rapidly improved; and on the evening of the 18th the diphtheritic false membrane—the last trace of which was seen in the forenoon hanging loosely from the posterior surface of the pharynx in the middle line—had entirely disappeared.

The paralysis of the veil of the palate, which commenced on Feb. 15, culminated in general paralysis of great severity and duration, from which the patient is only now (June 16) slowly recovering.

The intensity of the poison must have been great. On the first day of the disease, a little girl, residing in the house, was sent away to the village of Dunoon, on the Clyde, to be out of danger. She escaped herself, but carried the poison to a younger sister of the patient (Mrs. K.), who took the disease and died after six days' illness.

I have found the quinine solution useful as a wash in aphthæ, stomatitis, and other affections of the mouth; but my experience of it in these cases has been limited by the difficulty attending its use in childhood, owing to its very bitter taste.

ON GELSEMINUM SEMPERVIRENS IN THE TREATMENT OF ODONTALGIA.

BY JAMES SAWYER, M.D. LOND., M.R.C.P.,

Physician to the Queen's and Children's Hospitals, Birmingham.

I DESIRE to record my testimony in favour of gelseminum as a remedy for odontalgia. The drug is not very generally known to English practitioners, although it has been long in use in America.

Gelseminum sempervirens, the yellow jasmin, or woodbine, belonging to the natural family *Apocynaceæ,* grows plentifully in the Southern States of North America. The root, the part used in medicine, is sent to England cut up into small pieces, and these are of a brownish colour externally, of a greyish colour on section, from half an inch to two inches in length, and about a quarter of an inch in thickness. Several fatal cases of poisoning by gelseminum have been recorded. Death seems to have arisen from asphyxia, resulting from paralysis of the respiratory muscles. The drug appears to act mainly upon the nervous system, impairing the sensibility of the sensory nerves.

The dose of the powder of the root is from one to two grains. I have always used a tincture prepared according to the following formula, for which I am indebted to Mr. Dewson of this town:—Take of gelsemin root, in coarse powder, two ounces; of rectified spirit twenty fluid ounces. Moisten the powdered root with ten ounces of the spirit, and allow the mixture to stand for twenty-four hours. At the end of that time pack in a percolator, and add the remaining ten ounces of spirit. When the fluid has ceased to flow, remove the contents of the percolator and press them. Add the pressed liquid to that obtained by percolation, filter, and make up with rectified spirit to a pint. Eleven minims of the tincture are equal to about one grain of the root. The tincture contains only a trace of tannin, and may be given with any of the preparations of iron.

I have rarely found gelseminum fail to give decided and lasting relief in cases of neuralgic pains in the face and jaws, associated with carious teeth. I have usually given fifteen minims of the tincture every six hours.

Reviews.

Practical Examination of Urine. By JAMES TYSON, M.D. 8vo. pp. 182. London: Trübner and Co.

IN the preface the author modestly apologises for adding another to the many text-books already existing on the examination of the urine. The book itself, however, is his best apology; for long familiarity with the subject and experience in teaching it to students have enabled him to produce a work in which the various methods of examining and analysing urine and urinary deposits are given briefly, but quite as fully as is necessary for the wants of the practitioner, and so lucidly that one may readily find in it the answers to difficult problems which he has been unable to solve by the aid of larger treatises.

Lectures on Pathological Anatomy. By SAMUEL WILKS, M.D., F.R.S., and WALTER MOXON, M.D. Second Edition. Churchill, 1875: pp. 672, with seven lithographic plates.

Manual of Pathological Anatomy. By CHARLES HANDFIELD JONES, M.D., F.R.S., and E. H. SIEVEKING, M.D. Second Edition; revised, enlarged and edited by J. F. PAYNE, M.B. Churchill, 1875: pp. 871, with 195 woodcuts.

THOUGH not directly connected with the subjects to which this journal is devoted, the science of pathology is so interesting to all who are engaged in the practice of therapeutics, that no apology is needed for introducing these two important works to our readers.

It speaks well for the profession in England that the same publisher should be able to bring out two such volumes at the same time. Both are called second editions, but both have been so much altered and enlarged by the younger editors that they are practically new books.

Dr. Wilks's Lectures, published in 1859, were brief and unpretentious in plan and extremely careless in style; in fact, much of the volume was little more than a *catalogue raisonné* of the splendid pathological museum of Guy's Hospital. But there was something very attractive in the colloquial manner; every page showed thorough knowledge of the subject from practical work in the dead-house, and some of the passages, as those on phthisis, on emphysema, on Bright's disease, pyæmia, and tumours, were models of thoughtful study. The present volume is more than doubled in size, and has not only been revised and completed throughout, but entire sections have been re-written. The seven lithographic plates, illustrating the histology of tumours, are reproductions of the beautiful drawings by Dr. Moxon which were published in the Guy's Hospital Reports for 1872-3. In their present form these lectures are full of interest; the writers speak from the full stores of their own experience, and at the same time with adequate knowledge of the progress of pathology in Germany as well as in England. There is at times, perhaps, a too exclusive citation of authors belonging to their own school; but the fault, if fault it be, is not an ungenerous one; and in one illustrious instance no more than bare justice is done to the transcendent services of their *capo scuola*, the late Dr. Addison, not only in the discovery which will be always associated with his name, but in contributions to the pathology of pneumonia and of phthisis, and in the recognition of that remarkable condition which has been named pernicious or idiopathic anæmia. The only criticism we feel called on to make on this volume is that there is a great want of historical and bibliographical references. Such terms as tubercle and adenoma need explanation if they are not to mislead, and some reference to authorities at the end of each section would have added little to the bulk of the volume, and would have made it the most complete, as it is certainly the most able and original, work on the subject.

Dr. Payne's edition of Jones and Sieveking's Manual is a most learned and accurate book; full of well-chosen references, never introduced for display but for use, clear and thorough in details, and well illustrated by excellent woodcuts, of which the histological ones are almost entirely due to the editor. With less character and colour than Wilks and Moxon's Lectures, it is so judicious and impartial as to leave no room to regret the absence of more decided or more dogmatic opinions. The former part, on general pathology, which has been least altered, is not perhaps equal to the larger portion on the morbid anatomy of the several organs; and in some places the new garment does not perfectly match with the old. Dr. Handfield Jones represents the generation whose pathology was largely humoral, chemical, vital, or even metaphysical; while Dr. Payne is no exception from the rule which makes all younger pathologists incline to the solidist school, prefer mechanical to more subtle explanations, and believe only half that they hear and not all that they see. Probably he would have produced a more entirely satisfactory book if untrammelled by working on one already written; but in spite of this inherent drawback, the work has so many merits that it is probably the best handbook on the subject for students and for practitioners.

We have no space for quotations which would do justice to these two excellent works; but would recommend those who take up the "Lectures" to begin with the admirable chapter "on the Association of Morbid Conditions," which closes the volume; and those who read the "Manual" to choose as a specimen the clear and masterly discussion of the pathology of pneumonia and of phthisis.

On Paralysis from Brain Disease in its Common Forms. By H. Charlton Bastian, M.D., F.R.S., &c. London: Macmillan and Co. 1875.

THIS book is the publication in a separate form of lectures which have already appeared in the pages of the *Lancet.* The subject on which Dr. Bastian writes is surrounded with difficulties, and is one which, perhaps, more than any other, is at present engaging the attention of physiologists and physicians. Dr. Bastian shows himself thoroughly able to deal with it, and he has written an excellent book. He first treats of the causes of hemiplegia, then of the signs and symptoms, and of the means of arriving at a regional diagnosis. The nature of the lesion or pathological diagnosis is next considered, and lastly, the principles of prognosis and treatment. The causes of hemiplegia are briefly discussed under the heads of rupture, occlusion, and spasm of vessels. In relation to these points Dr. Bastian gives a careful analysis of the works of Heubner and Duret on the vascular supply of the brain, thoroughly appreciating the value of such minute anatomical details in our efforts at advancing in a knowledge of regional symptomatology.

The modes of onset of hemiplegia are considered under the heads of the apoplectiform, the epileptiform, and the simple mode of onset. The character of each is carefully described, and the facts of clinical experience are viewed in the light of recent investigations into the functions of the brain by Hitzig and Ferrier.

The recent researches of Bourneville in regard to the variations of temperature in the apoplectic condition are duly considered, and their significance indicated. The usual symptoms of a hemiplegic attack are fairly discussed, and an excellent chapter is devoted to the cause of the exemption of certain sensory and motor functions in unilateral brain lesions.

Dr. Bastian rejects the common view that the sensory tracts converge in the optic thalamus, and believes that the facts of clinical experience are in opposition to it. On this point Dr. Bastian might have been a little more explicit, and we think that the grounds of his opinion are not so stable as he seems to regard them. A chapter is devoted to the alteration of nutrition consequent on hemiplegia. Many of these Dr. Bastian, we think, rightly attributes to secondary degeneration of the spinal cord consequent on the original brain lesion, and not directly caused by it. In discussing the functional difference between the two hemispheres the pathology of aphasia is considered, and on this Dr. Bastian writes with authority.

The differential diagnosis of the seat of lesion is given with as much precision as the present state of our knowledge will allow. Our author is of opinion that the posterior lobe of the brain is more concerned with the intellectual faculties than the anterior, and agrees with Hughlings Jackson in the opinion that mental impairment is more frequently associated with lesions of the posterior lobe than with any other part of the brain.

On this subject, however, there is room for considerable discussion, and Dr. Bastian wisely writes with caution. Diseases of the cerebellum are fairly treated, but we think they might have been discussed more fully. Dr. Bastian is careful to distinguish between the direct and indirect effect of lesions of the cerebellum, and we think his observations on cerebellar disease are of considerable value. Some excellent practical directions are given for the differential diagnosis of the cause of coma, a subject of no small importance when considered in the light of recent occurrences and mistakes. The chapter on prognosis is carefully written, and the treatment of hemiplegia is judiciously handled.

We heartily commend the book to our readers.

Issue of a Spirit Ration during the Ashantee Campaign of 1874.

By E. A. Parkes, M.D., F.R.S. 8vo. pp. 63. London: Churchill.

There are few things more important in practical medicine than a knowledge of how and when to give alcohol, and the medical profession certainly owes Dr. Parkes a deep debt of gratitude for the light thrown on this subject by his experiments. It is always satisfactory, however, to have the results of experiments made on a few men tested by the experience of numbers, as any fallacies are almost sure to be thus detected, and no better evidence could be afforded of the care and exactitude with which Dr. Parkes's former experiments were carried out than the complete confirmation which the conclusions he drew from them have received from the observations made during the Ashantee campaign upon the effects of alcohol on the troops. These showed that total abstinence improved the health, and that alcohol, though apparently beneficial when given with food after the day's march was done, was injurious while on the march, the reviving effect passing off after, at the utmost, two and a half miles' march had been accomplished, and being succeeded by languor and exhaustion as great or greater than before. When again resorted to its reviving power was less marked; and its narcotizing influence was often traceable in the dulness, unwillingness to march, and loss of cheerfulness of the men. Meat extract, on the contrary, in quantities of not less than half an ounce at a time, was not only powerfully reviving, but sustaining, and so was coffee, though to a considerably less extent. This evidence in favour of meat extracts is of great value at the present time when their power to act either as food or stimulants is so much disputed. The sustaining power of thin gruel, made from boiled oatmeal, during heavy work is well shown in one of the appendixes. This agrees perfectly with the observation of Alpine travellers, that small quantities of food at short intervals prevent exhaustion, and with our own experience that, although unaccustomed to exercise, we could carry a knapsack for thirty miles a day without fatigue by simply taking something to eat every two hours.

Although Dr. Parkes's report has been published in the *Lancet*, many will be glad to have it in a separate form; and the appendixes and introduction, which form one-half of the present little volume, add greatly to its value. We recommend its perusal not only to army surgeons, but to every one interested in the use of alcohol.

Clinic of the Month.

The Elastic Ligature for the Cure of Webbed Fingers.—One of the comparatively few instances in which the elastic ligature of Prof. Dittel becomes a real addition to our surgical appliances is illustrated by a case reported by Dr. M. Vogel, of Eisleben. The child was one of twins, three months old and puny. The deformity was symmetrical on the two sides and consisted in a complete union between the third and fourth digits, which were exactly equal in length. On the dorsal aspect the skin passed continuously without a furrow from one finger to the other. The nails were much curved on the outer sides, but at the contiguous parts they were smoothed off. On the posterior aspect the fingers had only one tip without any appearance of a division, and the folds opposite the joints were common to the two. The joints were freely movable, and there was in addition a slight lateral mobility in the neighbourhood of the middle articulations, but the terminal phalanges were united by a broad piece of bone which passed from base to base. The hands were altogether diminutive. This was a difficult case to deal with, not only because of the bony union between the two phalanges which it would have been a difficult matter to divide, but also because from the thickness of the web an operation with the knife would have necessarily left a very wide raw surface. He accordingly determined to make an attempt with the elastic ligature, of the efficiency of which he had already convinced himself. The first indiarubber thread was entered just above the last phalanx, and was tied over the tip of the united fingers, care being taken that it occupied an exactly intermediate position between them. At first, no inflammatory disturbance resulted, but after a few days, slight suppuration set in, accompanied by a little feverishness, and after eight days the phalanges, bones and all, were completely separated from one another, the resulting wound being only half the width of that which would have followed a cutting operation. During the process the ligature required tightening by placing a small roll of paper under it, over the tips of the fingers. The remainder of the web was divided by one ligature, which, however, required frequent tightening. It was complete in five days, but during this period there was considerable inflammation of the parts, with a good deal of fever, and a small abscess formed on the fourth finger, which required opening. Afterwards the two fingers were separated, and fixed with plaster on a pasteboard splint; and cicatrisation went on rapidly: while, to prevent the re-formation of the web at the junction of the fingers, an elastic thread was attached to a band placed round the wrist, and gently stretched between them. After a few weeks the fingers, though still somewhat deformed, had so far regained their natural appearance that the minute scars on the contiguous sides required a careful search for their discovery. The operation on the right hand was almost an exact repetition of that on the left; but here no inflammation of importance was set up, which may be attributed partly to the fact that each pair of phalanges were divided separately in consecutive operations, and also that salicylic instead of carbolic acid was used as a dressing. (*Medical Times and Gazette*, May 15, 1875.)

The Influence of Occupation on Disease.—Dr. Balmanno Squire has collected and arranged statistics of the cases of skin disease that have come under his notice during the past five years in the East and West Branches of the British Hospital for Diseases of the Skin; the one branch being situated in Finsbury Square, the other in Great Marlborough Street. The two registers have always been carefully kept, and being at a considerable distance apart, the influence of local trades and occupations is neutralised. The results were obtained by dividing the number of persons engaged in each occupation in London, as ascertained by the Census of 1871, by the number of patients of each occupation respectively that attended the hospital. The results of course show only the comparative liability to skin disease of the several occupations. A mean of liability, by which the following statistics may be absolutely gauged, is arrived at by dividing the total number of the male population in London by the total number of males attending the hospital during the last five years. This process gives a mean average liability in the case of males, as applied to these tables, of 1 in 70. The same process applied to the case of females, gives a mean liability of 1 in 100. The following are only some of the occupations given by Dr. Squire:—Leather-cutters, 1 in 7; weavers, 1 in 14; dyers, 1 in 16; gardeners, 1 in 20; warehousemen, 1 in 28; clerks, 1 in 31; carvers and gilders, 1 in 33; wood carvers, 1 in 33; railway servants, 1 in 36; bookbinders, 1 in 39; travellers, 1 in 44; brass-workers, 1 in 50; tailors, jewellers, printers, masons, and bakers, all between 1 in 50 and 1 in 60; grocers, musicians, hair-dressers, smiths, and postmen, between 1 in 60 and 1 in 70; tanners, porters, cabmen, cigarmakers, and engineers, between 1 in 70 and 1 in 80; painters, opticians, barmen, and coopers, between 1 in 70 and 1 in 80; gunmakers, watchmakers, hatters, and labourers, between 1 in 90 and 1 in 100; domestic servants, 1 in 109; police and bootmakers, 1 in 114; corkcutters, ironworkers, and plasterers, 1 in 124; soldiers and sailors, 1 in 125; dairymen and butchers, 1 in 133 or 135; bricklayers, 1 in 165; carmen, 1 in 191; builders, 1 in 202; costermongers, 1 in 324; artists, 1 in 550; and plumbers, 1 in 702.

In the case of females:—Box-makers, 1 in 32; needleworkers, 1 in 36; schoolmistresses, 1 in 68; tailoresses, 1 in 91; charwomen, 1 in 103; milliners, 1 in 119; cooks, 1 in 129; domestic servants, 1 in 136; nurses, 1 in 192; laundresses, 1 in 231. It does not appear, therefore, that some of those occupations usually regarded as the most unhealthy really render those who follow them materially more liable to cutaneous affections than otherwise. (*Medical Times and Gazette*, May 22, 1875.)

Etiology of Hysteria.—Dr. James Anderson, in a paper read before the Medico-Chirurgical Society of Glasgow, believes hysteria to be the result of a certain degree of mental incapacity, the manifestation of a mental weakness or derangement. This alone, he thinks, can account for the infinite variety of phases which the disease presents. Impressions which usually pass by unheeded are carefully caught, and brooded over and magnified; and certain sensations which are to a healthy mind indifferent, *i.e.*, which require "attention to the operations of our mind to become conscious of their existence," become sensations disagreeable, because the necessary attention is given to them. The view that hysteria is a form of mental derangement explains how it is that one patient may by her example set others into a similar condition, and Dr. Anderson argues that if hysteria depended on any morbid condition of a particular organ (except, of course, the brain) a far more definite train of symptoms would be associated with the disease, and if such lesion were the cause, he should certainly expect that direct treatment would be serviceable. Again, he observes, that if hysteria depended upon some uterine affection, he should surely be able to make out the lesion in most instances; or, given the lesion, find hysteria a more usual symptom, but this is not the case, and he has himself been struck with the total absence of anything like hysteria in genuine uterine complaints, and in the majority of hysterical cases, with the complete absence of any disorder of the generative organs. Then, too, if this kind of affection were a primary cause, should we not expect to find it exerting something like a hereditary influence? But who would think of saying that Mrs.

—— is hysterical, but it is in the family, her mother and aunt were the subjects of prolapsus uteri and dysmennorrhœa respectively? Yet we should not be surprised to hear that one suffered from epilepsy, and the other from occasional attacks of mania. Further, it is said that at puberty the liability to hysteria begins, but with the exception of idiocy, we may say almost as much of any mental disorder. The exciting causes of hysteria are, however, innumerable, and any shock to the nervous system may bring on a severe hysterical seizure. In this way disorders of the uterus and sexual system may become an exciting cause of the disease. (*British Medical Journal*, June 26, 1875.)

Sterility from Anteflexion of Uterus and Stricture of internal Os Uteri.—Dr. Heywood Smith considers that of all the causes of sterility depending upon malposition of the uterus that of anteflexion is the most common. Other malpositions of the uterus except marked retroversion, leave the corvix uteri depending into the posterior original *cul de sac* in the dorsal decubitus; but in acute (as regards the angle) anteflexion the os uteri is lifted out of the posterior *cul de sac*, and placed in a position unfavourable for the reception of the seminal fluid. Anteflexion, dysmennorrhœa and sterility are then conditions so frequently associated, that when a patient comes complaining of dysmennorrhœa, and is also barren, a vaginal examination more often reveals anteflexion than any other condition. It is the dysmennorrhæa that causes the patient to seek for advice. In the lower classes relief is seldom sought for barrenness, whereas it is frequently sought for by the better classes. Dr. H. Smith gives a case in which the patient, æt. twenty-nine, had been married six years. The catamenial period was accompanied by pain, which was relieved by the passage of a thick sound. Dr. P. Smith's dilator was introduced, and a constriction existing at the internal os was divided bilaterally, and Greenhalgh's spring metallic stem was left in the uterus. In a fortnight after, having been in the meantime extended, it was withdrawn. Nearly a year afterwards she was seen again. The external os was divided a little more freely, and the spring stem introduced and worn for three weeks. After this, a thick sound was occasionally introduced, and at length conception occurred, and she was delivered in due time of a living child. (*British Medical Journal*, July 3, 1875.)

Treatment of Obstinate Sickness during Pregnancy.—Dr. Henry Bennett calls attention to chronic inflammation of the body or of the neck of the pregnant uterus as being a very important and a very frequent cause of vomiting in pregnancy; he thinks that it may always be suspected when sickness proves unusually severe and intractable, and that no practitioner is justified in continuing to treat by medicine without making a most careful ocular and digital examination of the uterine organs. Ulceration generally accompanies the inflammation, and the granulations are large and fungoid, bleeding easily when touched. The examination made should be thorough. In regard to the treatment, as soon as under the influence of local surgical treatment, emollients, astringents, caustics, &c., the inflamed surfaces assume a healthy hue ; the uterine sickness ceases, and when they become healthy it disappears or assumes its usual mild form. Dr. Copeman, of Norwich, supports a statement made by Dr. Graily Hewitt, to the effect that obstinate vomiting in pregnancy is due to displacement or flexion of the uterus, though he does not believe such flexion is the only condition which gives rise to the vomiting. He gives a case in which, when the vomiting had proceeded till there was danger of starvation, he detected on examination a decided *retroversion* of the uterus, which he rectified and prescribed oxalate of cerium. The sickness soon ceased, and the patient went on well. His opinion at the time was, that the headache, pelvic, and bearing down pains were relieved by putting the uterus into a natural position, and that the sickness was stopped by the oxalate of cerium, but from Dr. Hewitt's observations, he now thinks it highly probable that the retroflexion was the cause of all the trouble and its rectification the cure. (*British Medical Journal,* June 12th and May 15th, 1875.)

Puerperal Fever.—An interesting debate has recently taken place at the Obstetrical Society on the relation of puerperal fever to the infective diseases and pyæmia. It was opened by Mr. Spencer Wells, on April 17th, who commenced by referring to Dr. Arthur Farre's definition contained in the "Nomenclature of Diseases," which is, that "Puerperal fever is a continued fever communicable by contagion, occurring in connection with childbirth, and often associated with extensive local lesions, especially of the uterine system." To this definition this very important note is added, "In returning cases of puerperal fever the more important local lesions, such as peritonitis, effusions into serous and synovial cavities, phlebitis, and diffusive suppuration, should be specified." Mr. Wells dwelt upon the word *often* in the above definition, and asked whether the members of the society had ever seen a case of puerperal fever which could not, on careful inquiry, be traced to exposure of the patient to some one or other of the contagious or infectious fevers, scarlet fever, diphtheria, small-pox, &c., and if not, whether the puerperal was not a traumatic or surgical fever, erysipelas, pyæmia, or septicæmia, and whether all the results of these could arise in a healthy woman placed in favourable conditions, if she had not been exposed to morbid poison. He then proceeded to ask that, assuming there is a form of continued fever communicable by inoculation or infection, how can its spread be checked, what relation have bacteria to it, and what is the value of antiseptics. Dr. Leishman, the first speaker, stated that he had of late years become more and more convinced that a large proportion of cases of puerperal fever have their origin in pyæmic or septicæmic infection. There are other cases, however, in which a patient in the puerperal state unfortunately becomes the subject of diseases of specific origin as happens with scarlet fever, and there are still others in which it would appear that the original symptoms are those of a local inflammation, metritis or peritonitis, localized or general.

Dr. Newman held that there is no such thing as a definite puerperal fever so called. In a large number of instances in which he had had the opportunity of making the investigation, he had found a distant though definite link in the occurrence of possible transmission to the patient of some definite infecting poison. He thought the mental conditions which commonly associate themselves with pregnancy should not be overlooked as constituting powerful predisposing causes to disease, and as modifying the course of the febrile symptoms.

Dr. Braxton Hicks stated that in eighty-nine cases he had found that more than three-fourths had been connected with animal poison, including decomposing material from the uterus, and half of these were connected with scarlet fever, and that in the remaining cases, though no definite history could be obtained, yet they presented no points of distinction from the foregoing cases. Some of them were, no doubt, due to mental conditions, and others were of traumatic origin and due to bruised tissues.

Mr. Jonathan Hutchinson thought that many cases of puerperal fever were due to erysipelatous or other infection, the poison being introduced from without, whilst others were due to septicæmia or poisoning of the blood, induced by inflammation of the patient's own tissues.

Dr. Richardson pointed out the peculiar condition of the blood in puerperal women, and was of opinion that we *cannot* positively state either from experiment or from observation, that there is any such thing as a special poison belonging to the puerperal state, or a special poison creating puerperal fever. Dr. Barnes did not see his way to discard the term puerperal fever, but divided its causes into those entering from without and those arising from within, and he thought the peculiar condition of the patient after childbirth was the cause of her liability to febrile affection. Dr. Squire maintained that there *is* a fever after childbirth caused by a morbid poison, communicable by infection, and that it is not identical with the fever caused by infection of scarlet fever or any other acute infectious disease. Dr. Brunton had not found the poison of contagious diseases so productive of puerperal fever as had been stated by many speakers. He thought it was simply autogenous; that it begins in the uterus of the female who has very lately had hæmorrhage or is weakly, and that there is an imperfect contraction of the uterus; a clot remains, that clot decomposes, and the pyæmic poison is produced. Dr. Graily Hewitt thought that puerperal fever is essentially a form of blood-poison. Dr. Arthur Farre stated that he was not aware of any form of contagious or infectious fever connected with childbirth, which is distinctly caused by a special morbid poison (if by that is intended a specific virus) and which has a definite progress. Dr. Wynn Williams and Dr. Tilt alike thought that too little weight had been laid on the autogenic origin of puerperal fever in the discussion. The latter dwelt strongly on the importance of intra-uterine injection in the case of fœtid lochia. Dr. Fordyce Barker submitted the following propositions to the meeting: 1. That the clinical phenomena of puerperal fever are quite different from those of surgical septicæmia or surgical pyæmia. 2. These affections do occur in puerperal women, and the result is a disease which does not constitute a continued fever communicable by contagion. 3. When either of these affections complicates puerperal fever, it modifies the clinical phenomena by symptoms which can be distinctly appreciated and accurately described. Dr. West considered that we had not advanced far, if at all, beyond the conclusions laid down by Dr. Ferguson, that the phenomena of puerperal fever depend upon a vitiated state of the fluids, and that in the condition of a woman in the puerperal state, such a vitiated state of the fluids is specially apt to arise. Dr. Snow Beck appears to think that the symptoms of puerperal fever are essentially due to the introduction of infecting matters either from within or from without. (*Lancet,* April, May, June, July, 1875.)

Extracts from British and Foreign Journals.

Transfusion.—J. Casse, in a memoir published by the Académie Royale de Médecine de Belgique, not only gives the results of a few experiments on man, but also of a number of experiments made in the Veterinary School at Brussels. He also gives a good historical sketch. He recommends the use of warm defibrinated blood, ascribing the chief value to the blood-corpuscles, and thinking the fibrin to be unessential. The fibrin, moreover, is quickly reproduced in the circulating blood, so that the blood of the patient undergoes only transient alteration from the injection of defibrinated blood. M. Casse injected defibrinated blood at various temperatures, namely, at 3°, 10°, 27°, 47°, 50°, and 55° C., and took the temperature in the rectum. On injection of blood at low temperature, the temperature of the body generally fell, and subsequently rose, the more strongly the lower the temperature. If blood were used warmer than that of the animal receiving it, the temperature of the latter rose considerably, but the change of temperature was not so considerable as when cold blood was injected. If the blood injected was of the same temperature as the animal, the least amount of change occurred. No ill effects resulted from allowing the temperature of the blood to fall to that of the room; and even in the case of man, blood at a considerably lower temperature was injected without obvious disadvantage. In reference to the point where the transfusion should be effected, he is in favour of the veins, and mentions especially the insuperable difficulty that often occurs in driving the blood into the peripheral branches of an artery, as well as the danger of causing inflammation, and even pyæmia, which may follow arterial transfusion if rupture of the vessels and extravasation of blood happen to take place. In regard to the quantity of blood to be injected, he has shown that it may be greatly increased and even doubled in volume without injuring the health of the animal. The freedom of the respiratory apparatus from all trouble during and after injection is a point of interest. The liver, on the contrary, becomes gorged. The brain was anæmic. The method of transfusion he preferred was simply the introduction of glass canula into the veins of the receiver; the blood, warmed and defibrinated, being injected by a syringe through a piece of tubing attached to the glass. Repeated injection of defibrinated blood into a healthy animal diminished its weight quicker and more persistently than even the entire withdrawal of all food; and on this ground M. Casse suggests that it might prove serviceable in polysarcia. (*Centralblatt f. Chirurgie*, 1875, No. 15.)

The Effects of direct Faradisation of the Ventricles of the Heart in the Dog.—Vulpian has recently experimented upon the effects of electrical stimulation of the heart, which are of interest in view of treating cases of sudden syncope (as in chloroform poisoning). He either stuck needles into the heart through the chest-walls or opened the thorax and maintained artificial respiration, at the same time transmitting powerful shocks of an induction current through them. Even when the electrodes were only plunged into the right heart, lively twitchings immediately occurred in both ventricles, which recurred for four or five minutes and then subsided into quiverings of the fibrils. After the lapse of about five minutes the ventricles passed into permanent diastolic relaxation. These phenomena were observed when the contact of the electrodes did not last longer than one or two seconds, and were observed alike in chloralised and curarised animals. On the cessation of the fibrillar contractions, the heart was unexcitable by any stimuli, either direct or indirect. Neither section of the pneumogastrics nor the antecedent administration of atropin made any difference; and Vulpian therefore concludes that the effects observed were due to the direct action of the electric current on the cardiac muscle. Further, the same succession of events occurred when only one electrode was inserted into the heart and the other was placed on the skin or in some adjacent part. He considers that the electric current conditions a kind of spasm of the musculature of the ventricle, by which it is prevented from reacting in the ordinary co-ordinated manner to the motor impulses proceeding from the cardiac motor ganglia. The cramp-like tremblings probably rapidly exhaust the rapidity of the heart. When the spasm has ceased, the action of the ventricle can no longer be excited through the nerves. These experiments therefore show that the direct application of electricity, especially of strong currents, to the heart in cases of chloroform narcosis is a very dangerous, if not certainly fatal, proceeding. (*Brown-Séquard's Archiv de Physiologie*, 1874, p. 975.)

The Dangers of Intrarectal Examination.—Dr. Robert F. Weir, whilst admitting the advantages that may be derived from intrarectal examination, points out that Simon, who first drew attention to the proceeding, had indicated the possibility of danger and the point where it was likely to be encountered. Simon has measured many recta, and finds that the greatest expanding capacity of the intestine is at about two-and-a-half inches above the anus, where it can be stretched from nine to twelve inches. From this point to the superior extremity of the middle third, it gradually diminishes to seven or eight inches, and from thence rapidly lessens in circumference until, in the middle of the upper third of the rectum, it does not measure more than six or seven inches, the narrowest portion being at the beginning of the sigmoid flexure. He also learned that he could rupture the intestine in the dead subject by forcing his hand, measuring eight inches, into this portion. This point, at which the dangerous narrowing begins, is distant from the anus some four-and-a-half or five inches, and corresponds to the third sacral vertebra, and also to the reflections of the peritonæum which run forward from the rectum—in the male to the bladder, and in the female to the uterus; constituting the lateral boundaries of Douglas's cul de sac, and called by Simon the ligamentum semicircularis Douglasii. When the hand in its greatest circumference rests at this point, the tips of the fingers can be introduced into the sigmoid flexure, and with the mobility obtained from the extra calibre of the intestine, and from the mesorectum and mesocolon of the sigmoid flexure, palpation may be made in favourable cases as high as an inch or two above the umbilicus. The limit to the upward motion is the check action of the ligamentum Douglasii, and if too much force be used, this may be ruptured as well as the intestine, the vesical, middle hæmorrhoidal, and uterine arteries. By the slow introduction of the hand, using a rotatory motion and avoiding force, experience has shown that a bloodless examination may be made with a hand measuring ten inches in circumference. In exceptional cases only is it necessary to incise the posterior margin of the sphincter ani muscle. Nussbaum and Popp have both been able, by intrarectal explorations, to touch the ensiform cartilage. Dr. Weir proceeds to give a case of intestinal obstruction, with the usual symptoms caused by stricture of the colon, in which intrarectal exploration was resorted to when the patient was under chloroform. The hand of the operator, measuring nine inches in circumference, was passed slowly to the sigmoid flexure with the result that the intestine was found to be healthy. With the hand in this position, the lower border of the left kidney was easily recognised, the aorta a short distance above its bifurcation, and to the right the distended caput coli. The hand was then withdrawn, having been inserted to a depth of eleven inches by measurement. The possibility of disease of the sigmoid flexure was excluded by the operation. During the rectal explorations, and probably in consequence of the subsequently discovered laceration of the intestine, the patient was much depressed, pulse feeble, and surface pale, but respirations regular. The colon on the right side was reached by Bryant's oblique incision; the lower edge of the kidney being seen. The gut was opened longitudinally, and about two quarts of fluid light-coloured fæces flowed out with relief to the somewhat tense abdomen. The intestine was stitched to the skin, and the remainder of the wound loosely stuffed with carbolised lint. The patient suffered much from shock, but rallied with stimulants for a time, and finally sank about twelve hours after the operation. At the autopsy, a stricture was found at the middle of the transverse colon, and a laceration of the front of the rectum running though the peritonial and muscular coats. (*Medical Record,* March 20, 1875.)

Ergotine hypodermically in Uterine Fibroids.—Hildebrandt, writing in the *Amer. Journ. Obstet.*, Feb. 1875, says:—"If we review all these circumstances; we are already enabled, after the comparatively small number of observations, to accept the following points as conclusively established on the prognosis of the treatment and cure of uterine fibroids by the hypodermic injection of ergotine. This treatment is most likely to be attended by favourable results:

1. When the tumour is richly provided with muscular tissue and possesses the consistence and feel of a tense, elastic cyst.
2. When the tumour is submucous.
3. When the walls of the uterus are sound, capable of vigorous contraction, not too much attenuated by dilatation or stiffened by exudation in their substance, and when there is no para- or perimetritis present.
4. As soon as the chronic metritis and parametritis, which frequently accompany fibroid tumours, have been removed by proper preparatory treatment, when the previously mentioned conditions again come into force.
5. When the tumour is unprovided with a capsule and merges directly without a boundary into the peculiar tissue of the uterus, which anatomical relation of uterine fibroids may be considered most favourable to their complete cure by absorption." (*Ibid.* p. 104.)

The Employment of Baths, etc., during the Menstrual Period.—The *Tribune Médicale,* No. 33, 1874, contains a report by Dr. Pradier on the above subject, followed by these conclusions:—

1. According to several authorities, some strong medicines,

such as emetics and purgatives, may be administered, or bleeding employed without inconvenience during menstruation. 2. Hydropathic treatment and sea baths have been given under the same circumstances for a long time without evil effects. 3. Several physicians do not hesitate to prescribe tepid baths in the same conditions. 4. As to mineral baths, one of our brethren has permitted them in like circumstances for seven years past, without having seen the least accident occur. (*Medical Record*, p. 112).

Chocolate in Chronic Intestinal Catarrh.—A series of articles from the pen of Dr. Karner have lately appeared in the *Allgemeine Wiener Med. Zeitung*, in which he shows the value of the substance as an article of food. In the last number of that journal he refers especially to its use in chronic intestinal catarrh, and cites, among others, the following typical case of chronic catarrh of the intestines, to illustrate its action in the simplest manner: "Rosalia M., aged 17 months, poorly developed and nourished, suffered from intense meteorism, numerous thin, fluid feculent discharges, which alternated from time to time with normal stools. There was considerable emaciation, and the child also had intertrigo, of which there were frequent relapses. The diarrhœas could be attributed only to poor nourishment. After strictly regulating the diet, small doses of Dover's powder and acetate of lead were first administered, and in three days were substituted by the chocolate, of which a cupful was given daily. A dessert-spoonful of the powder sufficed for a cup of chocolate. The mother was also instructed to allow the child as little fluids to drink as possible. The result was astonishing. The discharges decreased in number day by day, the weight of the child rapidly increased, and after a few weeks it had perfectly recovered; a remarkable change for the better was observed in its bodily development, and the intertrigo had not recurred." (*Ibid.* p. 115.)

Bromide of Ammonium in Rheumatism.—Dr. J. M. Da Costa, Visiting Physician to the Pennsylvania Hospital, Philadelphia, while discussing rheumatism in a clinical discourse, says of this medicine, that the results he has obtained from it have been very satisfactory. He has now had the remedy on trial for more than a year, and has come to favour its use from the fact that it relieves the pain, acts generally upon the skin, keeps up the action of the kidneys, and, as he thinks, lessens materially the tendency to internal inflammations. He is further pleased with the remedy for the reason that the cases which he has treated with it have seemed to have a shorter duration than cases treated according to other plans, and quite as short as those treated according to the alkaline plan. The advantage which it possesses over the alkaline treatment is that the recoveries are good recoveries; there is no pallor and anæmia, general distress, alteration of blood and tissues, which the long-continued administration of alkalies will cause. For these reasons he is in the habit of using the bromide of ammonium in the treatment of this class of cases. It is sometimes associated with acetate of potash, when internal complications render it desirable to have the influence of a somewhat more active diuretic. As soon as the acute symptoms have disappeared, the remedy is followed by the administration of quinine in fair doses, which has, he believes, the power to lessen the tendency to relapses. (*Medical Record*, p. 115.)

External Use of Turpentine in the Treatment of Tonsillitis.—In the *Leavenworth Medical Herald*, Dr. S. H. Roberts strongly recommends the use of turpentine externally in tonsillitis. He folds the flannel to four thicknesses, wrings it out in hot water, and pours oil of turpentine over a spot the size of a silver dollar. The flannel is then applied over the subparotid region; and the fomentation continued as long as it can be borne. After removal, a dry flannel is applied, and the same region rubbed with turpentine every two hours. This application is continued daily till resolution occurs. The doctor believes, from the evidence of his long experience, that thus applied early in the disease the oil of turpentine has almost a specific effect in tonsillitis. That its action is not simply that of an irritant he has proved by employing mustard, croton oil, tr. iodine, &c., in the same class of cases. They always failed to diminish the inflammation of tonsils, while the turpentine succeeded. (*Ibid.* p. 117.)

Nitrite of Amyl in Cardialgia and Tetanus, &c.—Funkel (*Deutsches Arch. f. Klin. Med.*) recommends the use of this remedy in cardialgia. After a few inhalations the pain disappears, and if it return, as in a few instances it does, they are to be renewed. The neuralgias accompanying menstruation have also yielded to its influence. One case of tetanus, which had resisted the action of all the means hitherto applied, yielded promptly to the inhalation of two drops three times a day. (*Berlin Klin. Woch.*, Jan. 4, 1875; *New Remedies*, p. 119.)

Subcutaneous Injection of Carbolic Acid in Traumatic Erysipelas.—Dr. Hirschberg relates the case of a slaughterman who accidentally cut his upper arm, the wound being about five inches long, and penetrating the muscles. A good deal of venous hæmorrhage followed. On the second day a bad attack of erysipelas of the arm came on. A two per cent. solution of carbolic acid was injected subcutaneously at the upper boundary of the erysipelas, and next day all traces of erysipelas had disappeared. The injections were repeated five times within the next three days, and the wound healed far more rapidly and with much less suppuration than could have been expected. (*Berlin Klin. Woch; New Remedies*, p. 121.)

Sulphuric Acid in the Treatment of Boils.—Dr. Madison Marsh, of Port Hudson, La., says, in the *Medical and Surgical Reporter*, that boils and other analogous affections are treated by him with sulphuric acid, which he regards as almost a specific. He has used the acid with constant success for five-and-twenty years. "As soon as the patient applies for relief," he says, "I put an adult on elixir vitriol, 20 drops three times a day, in a glass of sweetened water, one hour before meals, previously smearing the teeth well with fresh butter or chewing a piece of fat pork, for a sure protection to the teeth. This is much better than sucking through a quill, as there is in this way regurgitation enough to throw the acid forward on to the teeth. Using the butter or pork is a perfect protection, if the teeth are subsequently washed with a solution of bicarb. soda, a heaped tea-spoonful to a glass of water. In the use of sulphuric acid in this way, the boil (or crop) then on hand will soon melt away, and there will be but one effort more to return before they will finally disappear, no more to reappear. The acid should be kept up in ten-drop doses for at least two weeks after the boils have disappeared. To assist in their local treatment, to effect a speedy cure and afford relief from pain and soreness, I apply a piece of common adhesive plaster, cut round, sufficiently large to cover the tumour to the extent of the areola, clipping the edges so that it will set smooth; or a little shoemaker's wax spread on a cloth will do just as well. I have made this application to saddle boils, and next day rode in the saddle very comfortably, the boil progressing to maturity with very little pain, and sometimes effecting an abortion at once. In this connection I have read in your *Periscope* a very interesting and scientific article on the sulphides of soda, potash and calcium, as an antidote for all these ills of humanity. And now, here let me suggest, perhaps the chemical play of affinities in nature's chemical laboratory may evolve the sulphides in the same way that chloral amateurs claim that hydrate chloral is metamorphosed in the blood to chloroform." (*New Remedies*, p. 134.)

The active principle of Senna.—New proofs have been furnished of the easy alterability of the active principle of senna, in several papers recently presented to the University of Dorpat. The results of numerous and repeated experiments upon infusion of senna show conclusively that when an infusion of senna is evaporated in the air to the consistence of an extract, the product loses much of its therapeutic activity. If the extract so obtained be dissolved in a large quantity of water, and evaporated a second time, the extract obtained is inert. The results, though contrary to those obtained by Heerlein (*Pharm. Cent. Blatt.*, 1851,) and noticed in the *U.S. Dispensatory*, p. 772, seem to be abundantly proved. The following results were obtained from the experiments made, and which are noticed in a recent number of the *Journal de Chimie et de Pharmacie.* Alkalies rapidly alter the purgative principle of senna at the temperature of ebullition. An infusion of senna in lime-water raised to a boiling temperature, and the lime subsequently removed by carbonic acid, gave a liquid which was quite inert. An infusion of senna, to which caustic potassa had been added, and raised to a temperature of 212°, was, after neutralisation by an acid, likewise inert. Mineral acids act with scarcely less energy. Vegetable acids exert only a feeble action. The results of numerous experiments also show that the purgative principle of senna is insoluble in concentrated alcohol, for the alcoholic extract obtained was without purgative action. Cold water dissolves this principle very rapidly. Senna treated by concentrated alcohol loses its taste and odour, but preserves its activity. The use of senna previously exhausted by alcohol should become general; for the infusion prepared after exhaustion, being free from disagreeable taste, can be easily administered even to children, who take it, according to the above authority, without the slightest repugnance.

Compound Tincture of Benzoin in Chronic Dysentery.—Mr. Donaldson observes that the use of this remedy having again been revived by Surgeon W. J. Charlton, is beginning to be frequently used in Burmah. The combination usually prescribed by Dr. Charlton is—

℞. Tinct. Benzoini Co. ʒi
,, Catechu Co. . ʒj
,, Opii . . . m x
Ext. Hæmatoxyli . gr. x
Aquæ . . . . . . ℥ j

Ft. haust. To be given three times a day. It occasionally happens, particularly in those cases where ipecacuanha has been unnecessarily persisted in, that the stomach becomes intolerant of the medicine. In such a contingency it may be administered by the rectum with equally good effects, from one to four drachms being employed in combination with mucilage, tincture of opium, &c. for each enema. (*Indian Med. Gaz.*, June 1, p. 167.)

Villate's Mixture in Caries.—In a paper in the *New Orleans Medical and Surgical Journal*, Dr. Hopkins mentions that this mixture was originally employed for caries in the horse; and was afterwards used by Notta and Nelaton.

The original formula of this solution, as first composed by Villate, is as follows:—

℞. Liquoris Plumbi Subacetatis . . . . . . ℥ij
Zinci Sulphatis Crystal. and Cupri Sulph. Crystal. āā℥ ss
Aceti Vini Albi . . . . 3℥ij ss mix

Dissolve the salts in the vinegar, and add the subacetate of lead. Shake before using.

It is very important that this preparation is made as stated. Druggists very often substitute for the white-wine vinegar a solution of pyroligneous acid, in which case the liquid acts as a powerful caustic, and the patient cannot bear its application.

These two solutions can be very easily distinguished at first sight. When the pyroligneous acid is used, the solution, once settled, has a bluish hue; but when prepared with the white-wine vinegar it has a greenish hue. This is a capital point, for surgeons have noticed a great difference in using both preparations on the same patient. The pyroligneous acid solution has produced excessive pains and serious symptoms of irritation and inflammation.

The mixture of Villate, when first injected into a fistula, or applied to a wound, produces a sharp pain, which may last an hour or more; but the patient soon becomes accustomed to it, and in a few days bears it without complaining. To avoid violent pains in nervous or irritable patients, it should be at first diluted with water, and the dilution gradually made stronger until they can bear it pure.

The first injections determine inflammation in the parts coming in contact with the solution. Those inflammatory symptoms are generally limited.

Suppuration is more abundant, but will soon diminish, and stop entirely, which indicates a rapid process of cicatrisation.

In caries, flakes of bone will very often be washed out by the injections, or thrown out with the suppuration, but after their elimination the cure will soon follow.

The mixture of Villate could not be used like tincture of iodine in the treatment of cysts or circumscribed collections; in other words, in cavities not communicating with the exterior, into which more or less tincture of iodine can be safely injected. It is necessary that it should run out easily; it should, therefore, be employed only in the treatment of those cavities communicating with the exterior by means of fistulæ. (*Cincinnati Med. News*, May, 1875.)

Injections of Tincture of Iodine into the cavity of the Uterus.—In a paper on this subject Dr. Trask seeks to show:—

1. That a very considerable portion of cases in which the injection of salts of iron has apparently saved life, have been those in which it accomplished this end, not in virtue of its local styptic action, but because of its power to excite reflex action when cold, friction, pressure, &c., have failed.

2. That when it produces coagulation of blood in the orifices of the blood-vessels there is danger that the coagulation may follow the vessels into the substance of the uterus, producing dangerous thrombi, and that the blood already collected in the cavity of the uterus also may become converted into a hard, intractable coagulum which the uterus cannot expel, and which may, after a few days, decompose and give rise to septicæmia.

3. That there is evidence for believing that as an excitor of dormant reflex action, tincture of iodine may be substituted for the iron with positive advantage, from its efficiency as an excitor and from its antiseptic properties.

If these points are established, the use of iron salts in a solution sufficiently strong to induce coagulation of blood in the uterine vessels should, at any rate, not be resorted to until tincture of iodine has been tried and failed. (*Journal of Obstetrics*, February, 1875.)

Pythogenic Pneumonia.—Dr. Grimshaw remarks that hospital physicians have long observed that, contrary to *à priori* considerations, pneumonia—a disease which might naturally be regarded as peculiar to winter—discovers a tendency to prevail even in the warm season of the year. The weekly reports of the Registrars-General also bear striking testimony to the occurrence of a comparatively high mortality from pneumonia in early summer and autumn. In a table compiled from the Registrar-General of Ireland's Reports for nine years, Dr. Grimshaw finds that of every 100 deaths from *bronchitis*, 44 occurred in the first quarter of the year, 22 in the second, only 10 in the third, and 24 in the fourth; whilst in 100 deaths from *pneumonia*, 32 occurred in the first, 27 in the second, 16 in the third, and 25 in the fourth quarter. Dr. Grimshaw then gives a series of cases to show the clinical aspects of the peculiar form of pneumonia, which he terms pythogenic pneumonia. The disease does not follow the regular stages of pneumonic inflammation. In many cases it seems to be arrested in its first or congestive stage, but also often proves fatal. It has a close relationship to enteric fever, as shown by the characteristic appearance of the tongue, rose-spots on the skin, pain on pressure made upon the abdomen. The invasion of the disease is sudden, the patient getting a rigor without having experienced any previous malaise; this is generally succeeded on the following day by pain in the side and shortness of breath. The pain is often absent. The patient usually first comes under the notice of the physician between the third and sixth day of the disease, at which period he will generally be found to have a portion of his lung consolidated; his pulse from 120 to 140, extremely soft, and compressible. There is great debility and thirst, a constant short, teasing cough, with little or no expectoration. The physical signs during this period are those of ordinary pneumonia in its first stage. It may now suddenly subside, or it may follow the course of ordinary pneumonia; in the latter case, a tendency to relapse being observable. The disease is not usually very fatal, and there is not so much disposition to attack the lower lobe of the right lung as in ordinary pneumonia. In regard to the treatment, this was in many cases of a purely expectant character: but this, Dr. Grimshaw thinks, is not an advisable course. The drug which singly he has found of most value is quinine, given in considerable doses, as five grains every three hours, with a little nitrate of potash and dilute nitric acid. In cases where there was much depression, alcoholic stimulants or turpentine have been employed with manifest benefit. To relieve pain in the affected part, poultices have been successfully employed, and when counter-irritation was considered necessary, sinapisms preceded the use of the linseed cataplasms. In case of intense pain in the affected side, from two to four leeches usually gave relief. On no occasion were blisters employed during the acute stages of the disease. (*Dublin Medical Journal*, May, 1875.)

A Typhoid Epidemic, apparently arising from Infected Milk.—Dr. Ogston, of Aberdeen, records the case of a girl of 17, who suffered from typhoid fever, which was by exclusion referable only to infected milk. On examination, it was found that the water of the dairy came from two sources—a spring-well, pure and unimpeachable, and a roadside spout which came from a spring a mile further up country, but receiving no sewer above this. It was also fed by the drains of the surrounding arable land, and, after passing a place called Whitemyres, received, half a mile further down stream, a half-choked drain from a house (and ground soaked with sewage) where no illness existed. What it received from the drain was very insignificant in quantity. This water was used in the dairy for scullery purposes only; but it was conceivable that some of it might have entered the milk-vessels. About a week after the girl had died an epidemic of typhoid fever broke out in some of the healthiest and best quarters of Aberdeen; and it was soon discovered that the disease was almost without exception limited to the families supplied with the milk from this dairy, and that of all those so supplied a very large proportion had the disease. (*Glasgow Med. Journal*, July, 1875.)

Keeping the Bed after Confinement.—Dr. Goodell, of Philadelphia, in his account of the treatment of lying-in women in the Preston Retreat, writes as follows in regard to the common practice of keeping the bed :—Lying-in women are encouraged to get up for good when they feel so disposed, because there are to my mind strong objections to the rigorous maintenance of the recumbent position. Labour is in general a strictly physiological process, and there can be no sound reason why it should be made to wear the livery of disease. Nature teaches this very plainly, for most women wish to get up long before their physicians are willing to let them. The fact of a woman wishing to get up is to me a very good reason why she should get up. In the second place, few physicians will deny that nothing so relaxes the tone of muscular fibre as a close confinement in bed. In my experience a woman ordinarily feels stronger on the fifth day than she does on the ninth if rigorously kept under quilts and blankets. Once more: the upright position not only excites the womb to contract, but, by distributing the blood and equalising the circulation, it actually lessens the amount of the lochia, and shortens their duration. On the other hand, the dorsal decubitus keeps up a passive congestion of the womb as a whole, the engorgement of the greatly hypertrophied placental site, and a blood stasis in the now thickened posterior wall, all important factors in hindering the process of involution. Again: uterine diseases are hardly known among those nations whose women early leave their beds. From passages in the writings of the classics, it is evident that amongst the ancient Greeks and Romans—those models of physical grace and beauty—the women arose and even bathed in a running stream shortly after delivery, in some cases on the very day. Finally, what is sounder than all theory, a sufficiently long and well-sifted experience has proved to me that by such a treatment convalescence is rendered far more prompt and sure. At this result, very unexpected to the multifarious patients of the Retreat, they are constantly expressing their surprise. (*Cincinnati Medical News*, March, 1875.)

Oxygen as an Antidote in Poisoning with Phosphorus.—MM. Thiernesse and Casse have made some experiments on this point arising from a discussion in the Belgian Academy, in which it was maintained that whilst the raw oil was effective the rectified oil was inoperative. The authors first endeavoured to determine the advantages of transfusion of defibrinated and arterialized blood, both before and after venesection had been practised on the poisoned animal; the results proved unsatisfactory. The effects of the direct injection of oxygen gas, slowly performed, were on the contrary very good, providing it was done before any deep-seated alteration in the structure or composition of the body had been effected by the poison. If the gas was allowed to enter the veins gradually, no ill results follow. They found that 150 to 200 ccm. of oxygen were required for a dog weighing 12 to 18 lbs. avoirdupois, and from 300 to 500 for dogs weighing considerably more. They give a description of a simple apparatus they have employed for the production and injection of oxygen. (*Bull. de l'Acad. Roy. de Med. de Belg.*, t. ix. No. 1.)

The Administration of Ergot in Excessive Secretion of Milk and Inflammation of the Mammary Glands.—Herr Schtscherbinenkoff in a Raphanus epidemic in the department of Simbirski, in Russia, observed that amongst the symptoms of ergot poisoning a diminution or complete arrest of the secretion of milk was not unfrequent. He noticed also that this occurred in cows fed in part with the diseased grain or with badly thrashed-out straw, in which many of the grains remained. But since an accumulation of milk in the milk ducts is the essential cause of mastitis parenchymatosa, it occurred to him that it might be serviceable in preventing the production of the excess of milk. In two cases of multipara who, after each previous confinement, had suffered from mastitis suppurativa, Schtscherbinenkoff used ergot with the best results, giving it as soon as the swelling of the breasts from the increased secretion took place. In cases of milk fever, also, he gave, coincidently with the ergot, quinine, and in equal doses—about five to ten grains three times daily. He likewise administered it with excellent results during the period of weaning to suppress the secretion of milk. He gave as much as one drachm of ergot daily for a week without any unpleasant consequences. (*Centralblatt f. d. Chirurgie,* No. 19, 1875.)

The Treatment of Epithetial Tumours of the Neck of the Uterus by the Galvano-caustic Wire.—M. Labbé sums up the advantages of this method of treatment in the following propositions:—1. The removal of the tumour is so rapidly effected, the time not exceeding thirty to forty seconds, that chloroform is unnecessary. 2. Besides the rapidity with which the ablation is accomplished, the cut surface is so smooth and free from bleeding that there is little chance of secondary hæmorrhage. 3. The platinum wire is so supple that it can be applied without any effort being made to drag down the uterus. 4. The mode of application of the wire requires no instruction. It is important, however, that when it has been made to glow by the passage of the current that it should be pressed well into the new growth to avoid injuring the healthy parts, and this he effects by a special apparatus with screw. As soon as the removal is effected a cold vaginal injection follows, and as a matter of precaution it is well to place a pledget of lint dipped in perchloride of iron on the wound. (*Annales de Gynæcologie*, 1874.)

Uræmic Convulsions treated by Morphia.—Dr. Potter gives the case of a patient, æt. 62, who had been suffering for a year from Bright's disease. On the last day of January, 1874, he was seized with uræmic convulsions, each fit lasting from five to ten minutes, with from ten to twenty minutes of consciousness intervening. The consciousness during the intervals gradually decreased, until he lay between the attacks in a deep stupor, breathing stertorously. As all means tried for relief proved unavailing, and as the patient was sinking rapidly, twelve minims of Majendie's solution of morphia were injected into the cellular tissue of the fore-arm in the midst of a convulsion. No convulsion occurred during the four following hours. He then had two slight attacks, after which there was no return. In ten days he had so far recovered as to be dressed; he had partial paralysis of the right side and hemiopia, the left half of each retina being impaired. During the past year he has had no return of convulsions; he complains of muscular weakness of the right upper extremity with sensation of numbness of the right half of the body. The hemiopia has but slightly improved. The result in this case goes far to show that the danger to be apprehended from the use of morphia in uræmic convulsions has been exaggerated. The effects of opium upon the cerebral circulation in all probability differ widely from those which are caused by the non-elimination of the effete matter which in Bright's disease gave rise to uræmic convulsions. (*Boston Med. and Surg. Journ.*, May 27, 1875.)

Treatment of Hæmorrhoids by Injection of Ergot.—Dr. G. W. Semple reports five cases of piles, two of which were accompanied by prolapsus of the rectum, which he treated successfully by injecting into the rectum after every fæcal discharge half a drachm of the fluid extract of ergot with half an ounce of water. One had a greatly enlarged spleen, which was reduced to its normal size by the treatment. A third was that of a pregnant woman who suffered no inconvenience from the treatment. (*St. Louis Med. and Surg. Journal*, April, 1875.)

Operation under Chloral Hydrate.—Dr. J. and A. Nairne record the case of a delicate-looking female child, three years of age, which was put under the influence of chloral, and had the third metatarsal bone of her left foot removed for disease. An aqueous solution of chloral was prepared, of which

20 minims contained 12 grains, and they had also at hand a solution of strychnia of 2 grains to the ounce. At 10.30 10 minims were injected subcutaneously into the right lower leg; the child cried continuously for some minutes. At 10.40 10 minims more were injected, and the child given to its mother to carry about. 10.45 drowsy, but easily roused; starts and cries suddenly, and as suddenly ceases. 10.55, 10 minims more injected into the left lower leg; sleeps quite soundly; no flushing of face; wakes in a moment, and is asleep again in a moment. 11.5, 10 minims administered by the mouth; begins to snore; pinching makes her cry, but she sleeps immediately. 11.15, 10 minims more administered by the mouth. 11.20, seems now in a deep sleep: pinching does not awake her. The operation was now performed. During its performance she began to cry, but made no struggling. The eyes remained nearly shut, and the crying seemed like that of a dreaming child. She ceased crying immediately the operation was done, and was fast asleep in a moment. She was allowed to sleep for two hours. Strong tea was then prepared, of which she was made to drink a cupful, and in another three quarters of an hour she sat up, dazed-looking, but quite unterrified, and apparently oblivious of any pain. The solution of chloral was too concentrated, and made deep wounds afterwards, which, however, healed up well enough. (*Glasgow Med. Journal*, July, 1875.)

The Physiological Action of the Preparations of Bromine.—Dr. Steinauer observes that the value of the bromides is attributed by some therapeutists, as Schouten and Binz, to the alkali, whilst others consider it to be due to the bromine. In order to settle this point he made a series of experiments with different preparations of bromine, in some of which the preparation used consisted of a stable compound of bromine, and was eliminated by the urine in an unchanged condition, whilst in others the compound was instable, and was decomposed in the system, so that the bromine was discharged in the free state. The results of his experiments were as follows:— 1. The bromine compound exhibits an energetic action only in those chemical compounds in which there is a possibility of the bromine atom being detached. Experiments with hydrobromic acid and monobromated acetic acid, made both upon cold-blooded and warm-blooded animals, gave constantly the same results—namely, that in doses in which the acetic acid of the compound subcutaneously injected in an equal state of dilution produced no effect at all (as in frogs in 0·005—0·3 grm. doses, and in rabbits in doses varying from 0·05—1); the monobromated acetic acid rapidly produced a lowering effect upon the pulse and respiration, until the heart was completely arrested.

Researches made with the aid of artificial respiration showed that the action on the heart was the primary one. Other researches, in which after section of the vagi and after paralysis of its intra-cardiac terminal nerve fibres with nicotin, after which the action of the bromine was still apparent, showed that the action of the bromine was essentially upon the heart itself. Lastly, researches in which the experiments known as Stannius' and Munks' failed showed clearly that the action of the bromine was to paralyse both the cardiac muscle and the excito-motor cardiac nerve centre. Steinauer further observed that the bromo-acetic acid effected a diminution in the excitability of the ganglia of the spinal cord, as well as of the peripheric nervo-muscular apparatus. After the administration of the poison the animal lost its sensibility for tactile (contact and pinching) and chemical (brushing with acid) stimuli, and the same occurred after elimination of the influence of the will upon movement by division of the cord between the occiput and first vertebra, no reaction being obtainable at a period when in other animals not under the toxic influence of the drug mechanical and electrical excitation of the nerves still caused active contraction. The reflex paralysing influence of the bromine was not referable either to the affection of the motor nerves nor to the enervated muscles, but to its action upon the spinal centres.

In regard to those preparations of bromine which were so stable that the bromine would not separate, as in monobrom-benzol and sodium bromo-benzoate, no free bromine appeared in the urine; it was found in these cases that the substituted atom of bromine caused an alteration of the nutritive processes and the action of other compounds. (*Virchow's Archiv.* lix. p. 65, and *der Prakt. Arzt.* No. 2, 1875.)

Results of Non-mercurial Treatment of Syphilis.— Under the heading of Clinical Contributions to Syphilidology, Drs. v. Buren and Keyes report two cases to the Archives of Dermitology for 1875. The first was that of a physician, who while a student got a small primary insignificant sore. He took no medicine; a slight papular rash appeared. For this he physicked himself with laxative medicine, but took no mercury. The rash disappeared, and was not followed by a successor. His health remained perfect. Nine years after the chancre a node appeared upon the cranium. This caused no uneasiness, its nature not being suspected. The node remained hard, solid, untreated for eleven years, the general health continuing vigorous; but now the patient became prostrated for several weeks by an illness which had no connection with syphilis, and on recovery from the attack the node softened. After being opened the edges sloughed extensively, leaving the bone bare over a circular area of more than two inches in diameter. At the time of the patient's visit the necrosis had been visible for nearly a year; its nature had been suspected, but he had employed no specific treatment. Pus had burrowed under the scalp for several inches posteriorly. In a second case, the man remembered only that he had had a slight urethral discharge, which was, however, in all probability a urethral chancre. It was followed by double epididymitis. Twelve years afterwards some ecthymatous spots appeared upon his legs, which disappeared under the use of arsenic, leaving pigmented scars. A year after his general health failed; he had hemicrania and double vision, loss of memory, and evidences of failing brain power. He was sent to Europe, and after some months tertiary symptoms developed in the form of gummatous inflammation of the soft palate. Improvement commenced at once, and advanced with great rapidity under iodide of potassium. Both of these are cases which were mild, and should, according to Diday, not have been treated with mercury. The authors draw the following conclusions;—1. The evolution of syphilis may be mild and regular even when no mercury is used in the treatment. 2. With the mildest treatment at the beginning, syphilis, if untreated, may terminate in the most terrible consequences after years of quiescence, 3. The severity of tertiary lesion does not depend upon the previous use of mercury. 4. The efficacy of iodide of potassium, properly employed, does not depend upon a previous use of mercury. 5. The history of one of the cases shows that a father with syphilis may have a perfectly healthy child. In a paper on the use of iodide of potassium in syphilis, contributed to the *Philadelphia Medical Times,* March 13, 1875, Dr. Joseph R. Beck states that he has not made use of mercurials in syphilis for a very long time Notwithstanding that secondary symptoms rapidly disappear when mercury is employed, he maintains that we have only succeeded in masking the disease, and that after a time tertiary symptoms *are seen* to make their appearance. Syphilis, whether secondary or tertiary, cannot be radically cured in a few weeks or months, but requires a year or more of careful treatment. For the cure of syphilis by iodide of potassium, very large doses must be employed. He prescribes seven drachms of the iodide and four drachms of the ammonio-citrate of iron in an eight-ounce mixture, and gives a tablespoonful before each meal. Fowler's solution of arsenic (one drachm three times a day of an eight-ounce mixture, containing three drachms of the solution) is also prescribed; and if anæmia be present, one grain of quinine and two of pulvis ferri are given every three hours; also cod-liver oil, with fluid extract of valerian. The quantity of iodide and of Fowler's secretion are very gradually augmented till symptoms of iodism are induced. Its administration is then stopped for a week, and then resumed for a week; if iodism shortly again recurs, the patient is dismissed, as Dr. Beck believes, permanently and radically cured. (*Boston Med. Journ.*, May 27, 1875.)

Treatment of Vaginism.—M. Bouchut observes that the spasm of the vaginal sphincter in this affection is often due to the same cause as the spasm of the anal sphincter—a very small painful longitudinal fissure being detectable at the lower part of the orifice of the vagina. Forced dilatation would seem to be indicated here as in the fissure of the anus; but in M. Bouchut's opinion, before having recourse in either disease to so painful a procedure, we should try simple measures, which will often prove efficacious. To this end he strongly recommends vaginal suppositories formed of five parts of cacao butter and three parts of extract of rhatany, thoroughly well incorporated. One of these is to be introduced into the vagina night and morning and allowed to dissolve there. The patient should also employ a bran bath for an hour daily. (*Gaz. des Hôpitaux*, May 1.)

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⁂ Any of the foreign works may be procured on application to Messrs. DULAU, of Soho Square, W.C.;—WILLIAMS and NORGATE, of Henrietta Street, Covent Garden, W.C.;—or BAILLIÈRE, of King William Street, Charing Cross.

Department of Public Health.

THE HYGIENIC MANAGEMENT OF HOSPITALS.[1]

If an opinion may be formed from incidental revelations in the medical journals, and from the current gossip of the profession, it would appear to be a question whether, in regard to hospital diseases, such as erysipelas, diffuse cellulitis, pyæmia, &c., our newest hospitals present any appreciable advantages over our oldest. It is true that our oldest hospitals have been, as a rule, so amended in their internal arrangements and general management, that the prevalence in them of hospital diseases, which twenty-five years ago so often aggravated the condition of the patients in the wards, has been reduced very largely. But on the other hand, it is seemingly not less true that our newest hospitals, designed with special reference to the prevention of these diseases, differ little in this respect from the older hospitals as at present managed. This curious anomaly has served to point some arguments against hospitals altogether, at least for the treatment of surgical cases, unless indeed the hospital in size and structural arrangements be made to approximate to a private house or cottage. Conversely, an explanation has been sought in defects of design, and infinite skill has been brought to bear upon the questions of the dimensions and arrangements of wards, and their general regulation. But in the newer hospitals, whether constructed according to the earlier or the latest conceptions, hospital diseases make their appearance as in the older hospitals, to the vexation and disappointment of the medical staff and the apparent discredit of approved principles of hospital construction and management.

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[1] English Hospitals in their Sanitary Aspects. The Annual Oration delivered before the Medical Society of London. By George Buchanan, M.D.

Report on Recent Prevalence of Erysipelas in the Radcliffe Infirmary, Oxford. By J. Netten Radcliffe.

Latterly, this question has been treated so much with reference to the structural requirements of hospitals, that other and not less important considerations have been neglected. This subject has recently received the independent attention of two practised sanitary inquirers—one with reference to the general question, the other with reference to an outbreak of erysipelas in the wards of a provincial hospital, and the opinions which they have expressed deserve attentive consideration. The one observer entertains a very decided opinion that the frequent occurrence of hospital diseases, in both old and new hospitals, now chiefly arises from certain defective principles of sanitary management common to both, and which frustrate the results sought to be obtained by amended arrangements and general management, in the one case, and by the best considered structural design in the other. The other observer undesignedly illustrates this opinion in the completest way from a particular instance. The observers in question were Dr. Buchanan and Mr. Netten Radcliffe. The former, as this year's Orator before the Medical Society of London, took this question, and the question of hospitals in relation to public health administration, as the subjects of his oration. The latter has lately been reporting upon the prevalence of erysipelas in the Radcliffe Infirmary, Oxford.

Dr. Buchanan states his position thus:—

> "The proposition that a hospital has a duty to promote the recovery of its patients by all possible hygienic measures, as well as by the ministrations of the surgeon and physician, has, at least since the times of which I have spoken, commanded a certain vague assent. But down to our own days practice has been sadly behind principle in this regard; and abundant cases may be adduced of mischief done by hospitals, in civil and in military practice, for the mere want of that incessant solicitude as to sanitary conditions which would be considered inexcusable if it related to therapeutical conditions."

While, in fact, it has been recognised that sanitary medicine is, as Dr. Buchanan phrases it, "the equal and ally of curative medicine," this principle has to the present time been very imperfectly applied to the treatment of the sick in hospitals. Even with regard to those general sanitary conditions to which since the Crimean war so much attention has been given, there is still much to be desired, while in regard to the hygienic relations of particular diseases and certain classes of cases, almost everything systematic has yet to be done. Of the former conditions, Dr. Buchanan observes :—

> "I will say nothing of original design or construction—a matter on which those who are to have the management of the sick may or may not have been consulted—but it would be interesting to know, with reference to the every-day management of these institutions, in how many of them is such a thing as a plan of the drainage to be seen? or, in how many are water-cisterns periodically cleaned out? in how many is there some one responsible for current cleanliness, for the efficiency of water-closets? in how many could the state of the ward-air at early morning be vouched for? Admittedly these common things affect what it is the province of the hospital by all means to care for—the health of the hospital inmates; but too often, I fear, it happens that such matters are treated as the chance concern of anybody out of a dozen officers and servants. It is only when some hospital disease makes its appearance that these every-day sanitary matters are thoroughly looked into, and the records of hospitals abound with stories of how they have been neglected. In one place, a dust-bin provides matter for some interesting ætiological speculation in connection with prevalent erysipelas; in another, faults of closets and sinks disturb some deductions about the way of spread of fever; in a third, wards are over a dissecting-room; in others, imperfect drainage is found, and so on and so on. And for each such instance of sanitary neglect in connection with some palpable calamity, how many instances must there be where similar neglect goes undetected, doing its mischievous work not less surely because slowly, while its results are ascribed perhaps to the 'temperaments' of individuals, or to the 'epidemic constitution' of the time!"

Again, as to the hygienic relations of the sick in the wards, he says :—

> "It is not, however, till we go on to consider the hospital as a place specially devoted to sick and maimed people that we can begin to appreciate the full meaning of 'sanitary circumstances' there, or that we can attempt to realise the need that at every moment exists for a skilled sanitary care.
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> "Now we have to do with people giving off from their bodies not particles of waste merely, but diseased particles that have potency for harm to the body that generated them and to other bodies; and now we see a wholly new significance attaching to those common sanitary demands of cleanliness and dryness. Now we have to do with bowel secretions capable of specifically poisoning the entire sick community, and now we see a quite fresh importance attaching to the common demand for good drainage and for complete excrement removal. Now we are concerned with people wanting in healthy power of resistance to evil influences; themselves, let me repeat, helpless, and their very helplessness clamouring for protection at the hands of their guardians. Under these circumstances, surely the completest solicitude is given to ensure security against all preventible mischief. Surely it is impossible that a patient with consumption should have a case of typhus put in the next bed to him, or a compound fracture be brought into the neighbourhood of a case of erysipelas. It must be impossible that a disease so preventible as enteric fever should ever appear among hospital inmates; there can never be question of carelessness about dressings, of hands foul from the post-

mortem room. Rather the environments of each person are studied with reference to even the remoter chances of injury to him, and considerations of convenience are set aside when there can be question of even small advantage to the patient. With the curative side of hospital treatment we know that this is so : surely it is so also with sanitary care."

Alas! We know how different is the reality—a difference not, as a rule, arising from any failure to recognize the importance of the various matters, but from a failure to recognise the conditions under which the needful requirements can alone be carried out. What the cardinal condition is, Dr. Buchanan thus describes :—

"What I am sure of, however—and it is this point that I venture to insist on strongly—is, that there are few hospitals in the kingdom of which it can be affirmed that the sanitary arrangements required to fit the institution for the care of a number of sick are thoroughly known to a competent and responsible officer whose business it is to keep the governing body informed of the facts. Just as there should be some one charged with the duty of seeing to common drainage and ventilation, so there should be somebody to answer for the more special sanitary arrangements of the place ; whose business it should be to make sure, for instance, that stools possibly infective are disinfected before they are discharged into drains, that foul dressings are duly burnt, that patients on their admission are put in the particular wards, and placed under the particular circumstances that shall suit them best; who should be responsible for preventing accumulation of suppurating wounds in a ward, and for separating, with all proper precautions, any case that threatens to be erysipelas. Surely all these things should be somebody's business. They cannot well be the affair of non-resident physicians and surgeons ; they ought not to be the affair of student officers ; still less ought they to be considered as merely the concern of a steward or matron, or perhaps of a nurse or a servant. Efficient observation and record of the day-to-day sanitary circumstances of the various parts of a hospital, such as I contend it is the duty of every governing body to ensure, demands a thorough knowledge of hygiene and pathology, and some experience in the practical application of those sciences. The officer specially charged with these functions, again, should be a person to command the confidence of the medical officers, with whose province his own would be ever in contact. And he should be capable of enlisting students and others as fellow-workers with himself, and of adding from his special experience to the general store of hygienic knowledge.

"I trust the time is not far distant when an officer specially charged to look after the sanitary welfare of the institution will be found at every hospital in England. The duty is one that essentially pertains to a medical officer, and far preferably to a resident officer. Vaguely, no doubt, some such duty is now expected from most of those who, under the title of 'house-surgeon,' 'resident medical officer,' or 'medical superintendent,' are entrusted with the general professional headship of the establishment ; but this duty of sanitary superintendence is at best regarded as an incidental or second-rate matter, and neither the responsibility nor the authority needful to its efficient discharge is definitely imposed upon this officer, or on any one else by the governing body of the hospital. Obviously in regard of duty of this sort vagueness is the very thing to be avoided, and the present want of system must, as soon as the importance of hospital sanitary regulation is appreciated, give place to definite responsibility imposed on one person having the style and functions of a sanitary medical officer."

Now let us see how Mr. Netten Radcliffe's inquiry helps us to apprehend more clearly (if this be needed) the importance of Dr. Buchanan's opinions on the subject under consideration.

The Radcliffe Infirmary, Oxford, is partly an old building, partly a new building. The new building, so far as we have concern with it here, consists of a noble Accident Ward, on which the highest skill has been exhausted in construction and arrangement. The old building has been so amended, that its ward offices are models of excellent arrangement and construction, and the wards themselves are, for the most part, unobjectionable as to capacity and ventilation. Last year there was a serious outbreak of erysipelas in the wards almost wholly confined to the surgical cases, and of traumatic origin. Erysipelas appears to have shown itself in the city about the same time that it manifested itself in the hospital; but the disease in the hospital seems to have been produced therein. None of the wards occupied by surgical patients escaped, and the Accident Ward especially suffered. The conditions under which this outbreak occurred were partly peculiar to the wards, and partly peculiar to the Infirmary and city. The extension of the disease within the wards was "largely the result of propagation by contagion." Of the conditions peculiar to the wards, the most interesting perhaps relate to the Accident Ward. While on the one hand this ward had been built to represent the most advanced knowledge of hospital-ward construction, on the other, the ward was exposed to conditions which would largely diminish the advantages from the construction. All the ashes and ash-bin refuse of the hospital were screened beneath the windows; the laundry was also close to its windows, charging the atmosphere of the ward with undue and usually foul moisture; the air for warming it was the foulest the precincts of the hospital could supply; and the drainage was imperfect. As to the conditions common to the infirmary and city, the hospital main drain opened into an old sewer of the city system, which at comparatively frequent intervals became blocked up (unknown to the infirmary authorities), and was for months an elongated cesspool, with no means of ventilation except through the soil-pipes of the ward water-closets in the vicinity of the wards. Then as to ward management, there was no due proportion kept in the number of serious accidents put into a given ward ; there was no systematic isolation of the cases of erysipelas as they occurred in the wards even after the spread of the disease by contagion commenced, while the maintenance of a systematic rotation of service, by which every nurse in the hospital in turn undertook duty at frequent intervals in the Accident Ward, ensured a dispersion of contagion throughout the building. In fact, as Mr. Radcliffe points out, the rules of precaution which we are accustomed to insist upon in the case of contagious diseases in a private house were ignored in the wards of the Infirmary.

But, as Mr. Radcliffe shows, all these shortcomings arose not from any indifference of the governing body or the medical staff, but from the fact that everybody was responsible, and nobody was responsible. Indeed, after the too common practice of hospitals, there was no means of knowing at any given moment the actual status in the hospital of cases liable to traumatic infection, and of cases of traumatic infection, no systematic regulations for preventing their occurrence, or for effectually checking them if they did occur, and finally no systematic supervision of the many things summed up under the common designation sanitary condition of the hospital. Nor in the absence of any person or persons definitely responsible for and skilled in such supervision, was it likely that a different state of things could exist. Mr. Radcliffe urged, therefore, as a final recommendation, giving force to such other recommendations as he had to make, the appointment of a definite sanitary officer. He recommended, in fact, the substitution of a sanitary supervision and management of the hospital, based on precise data and skilled knowledge, for the rule-of-thumb sanitary management and supervision which had previously obtained. He recommended, in fact, in this particular case, what Dr. Buchanan urges as a general rule.

Just as a local sanitary authority needs for its assistance a skilled sanitary adviser in the form of a medical officer of health, so the governing body of a hospital needs, according to Dr. Buchanan and Mr. Netten Radcliffe, a medical officer who shall perform the same functions within the hospital. The different sanitary faults which discredit our newest hospitals, and are detrimental to the old, fostering traumatic infections within the wards, are faults which chiefly arise from the want of such an officer.

THE DISPOSAL OF SLOP-WATER.

SLOP-WATER, to the rural medical officer of health, is a source of unlimited vexation; to the Rev. Henry Moule it is a source of indefinite profit. The former, represented in this instance by Dr. Cornelius B. Fox, regards it as the cause of much obnoxious nuisance;[1] the latter, as the unappreciated agent of much gain in garden-stuff, beneficial alike to body and purse.[2] Dr. Fox, in brief, deals with the subject as it is; Mr. Moule as he would have it be.

But the crowning vexation in regard to slop-water is, that the medical officers of health cannot deal with it as sewage, even though it may flow from sewers. Dr. Fox, in a correspondence with the Local Government Board on this subject, has elicited the legal opinion that slop-water is not sewage, and cannot therefore be dealt with under specific clauses of Acts which refer to sewage. This opinion is founded upon a judgment of Vice-Chancellor Kindersley, in which that learned judge observed that "the word sewer comes from the word 'to sew,' *i.e.*, to drain, and has a much more extended signification (than drain) embracing works on the largest scale, such as draining the fens of Lincolnshire by means of canals, &c. In the common sense of the term, it means a large and generally underground passage for fluid and feculent matter, from a house or houses to some other locality," &c. Here it is taken by the legal advisers of the Local Government Board that the word feculent has not its ordinary meaning, but that it is used with a special limitation to *fæcal*, in the sense of excremental matter, that is, ordure. That is to say, that the learned judge, when speaking of the common usage of a word (sewer) which had other and wider applications, interposed without explanation another word having a received common meaning in a strictly technical sense! Turning to the last edition of Webster, we find of feculent, "foul extraneous, or impure substances; abounding with sediment or excrementitious matter; muddy, thick, turbid." Then again, it is equally implied that the judge set aside the common meaning of "sewage," namely, "the contents of a sewer, refuse liquids, or matters carried off by sewers," (Webster), substituting a wholly unrecognised and previously unheard-of definition. And again it is further implied that the definition of "sewers" and "drains," and the usage throughout the Sanitary Acts of "drainage" and "sewage" as convertible terms, must be interpreted with reference to this opinion of Vice-Chancellor Kindersley as to a limited common usage! It may be so, but as the whole of this series of cross-meanings rests upon the signification presumed to have been attached to the word "feculent" by the Vice-Chancellor, we are disposed to think that he used the word not in the sense assigned, but in its common accepted sense, just as he was speaking of sewers in "the common sense of the term."

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[1] The Disposal of the Slop-water of Villages. By Cornelius B. Fox, M.D., Medical Officer of Health of Central and East Essex. (Churchill, 1875.)

[2] National Health and Wealth promoted by the general adoption of the Dry Earth System, including the Safe, Inoffensive, and Profitable Disposal of Liquid Refuse. By the Rev. Henry Moule, Vicar of Fordington, Dorset.

Dr. Fox himself did not, in fact, escape a similar kind of error when he raised the question with the Local Government Board. When he asked the question "Is slop-water included under the title of sewage?" he raised a false issue. No such distinction as he there implied has to our knowledge before been suggested. Slop-water, that is, "dirty-water; water in which anything has been washed or rinsed" (Webster); that is, "foul with extraneous or impure substances" (feculent); that is, "refuse liquids or matter," fitted to be carried off by sewers, to wit, sewage. The common distinction between slop-water and sewage in ordinary use is not a distinction of difference, but a distinction of certain constituents of sewage. To restrict the signification of sewage to the proper contents of a water-closet, involves an absurdity, consistent more with the muddled sanitary administration of the Local Government Board than with the customary judgment of the Bench.

But Dr. Fox is most concerned with an expression of opinion of the Local Government Board, that as slop-water, not being sewage, "it might not be illegal, in the sense of an offence against the sanitary laws, to convey the slop-water whether deodorised or not into a water-course; but in such a case there might occur a breach of private rights." Where this may not be illegal of slop-water, is it not equally so of sewage? The question is rather if slop-water be not sewage, does this limit the power of sanitary authorities in dealing with the evils arising from its flow into streams? It would possibly be so with regard to section 10 of the Sewage Utilization Act of 1865, but hardly else. Dr. Fox's difficulty, however, consists more in the fact that the restrictions upon local authorities in dealing with slop-water are too great; and he blames the Local Government Board for not permitting a local authority to send the slop-water of a village into a river, after having declared that it was not illegal to do so; but he overlooks the fact here that the question was not of slop-water but of the outlet of a sewer, and that sanitary authorities are debarred from making a sewer which shall drain into any stream or watercourse by the Sewage Utilization Act of 1865. It is not easy to understand how sanitary authorities may get slop-water into a stream or water-course without a sewer, and they may not construct a sewer with such an outlet. Hence sanitary authorities must look for some other means of dealing with slop-water than pouring it into streams, and Dr. Fox discusses the different means at their disposal. He describes filtration by filters constructed after the Bradford pattern, with peat charcoal, and by filters constructed after an ingenious design of Mr. Haviland's, and he describes also the means by tank or cesspool in porous soils, by sub- or surface-irrigation of gardens or other grounds, by Dr. Bond's method of precipitation and filtration, and by the admission, when exceedingly diluted by waste water of manufactories, into canals and large rapid rivers. For the different special processes we must refer to the book itself, which is a most useful manual on the subject. As to the admission of slop-water into canals and rivers under certain conditions, Dr. Fox touches a question which we trust will receive careful attention in the discussion on the Rivers' Pollution Bill now before Parliament. The main point is, as he well puts it, that it should be rendered "impossible to introduce any slop-water into a water-course which is used, or likely to be used for drinking purposes." Subject to this restriction, considerable discretion should be permitted to local authorities in finding outlets for slop-water in canals and rivers, short of producing nuisance. If the provisions to secure rivers and water-courses from pollution be too stringently and generally drawn, they will necessarily lead to greater evils than the nuisance which it is sought to prevent.

But we say all this to meet the immediate practical needs of the moment, and without a trace of desire to imply that Mr. Moule is wrong in his opinion, that to pour slop-water into canals and streams is wicked wastefulness. Now he says: "I find by careful experiment that the liquid refuse [slop-water] of a family, as many as ten in number, if applied daily in due succession [through alternate cropping] to the plant and to the soil, may be safely and inoffensively disposed of on sixteen perches of ground. And a cottager with a garden may from these sixteen perches, from the produce of an earth-closet, and from a pen of twenty fowls occupying a perch of ground, raise that which shall be equal to £20 a-year. The fowl pen has a second object, namely, that of being a substitute for the dungheap and the pigstye. The soil within it should be left in its natural state; all waste matter should be thrown into it, and anything good for manure. And if it be turned over once a fortnight, the cottager, in addition to two thousand eggs, might make in a year one or two tons of manure. These, together with the contents of the closets, he might sell to the manure manufacturer, or to the farmer. The two together must be worth more than the barley he would require for his fowls." This, as we have satisfied ourselves, is a simple statement of fact, and it is in this direction that the education of cottagers having garden-ground is needed. We hope to live to see Mr. Moule's teachings in this respect bear as good fruit as his teachings in relation to the dry-earth closet.

But Dr. Fox entertains a doubt whether the increased dampness of soil arising from sub- or surface-irrigation with slop-water might not prove detrimental to the health of the people living near to the irrigated ground. With not a little knowledge of irrigated spots, the possibility of such harm, we must confess, has never occurred to us. Nor, indeed, can we conceive of such dampness occurring even in retentive soils except under conditions of management which would render it requisite for the sanitary authority to interfere. We trust that further experience of irrigation will remove this doubt from Dr. Fox's mind—a doubt which must impede the progress of such desirable knowledge as that which Mr. Moule teaches us.

ERYSIPELAS AND CHILD-BED FEVER.[1]

At a time when child-bed fever has been occupying so much of the attention of the Obstetrical Society of London, and the profession here generally, a contribution to the question discussed from the United States, but independently of the discussion, has peculiar interest. Not that the United States was unrepresented in the discussion in the metropolitan society, for Dr. Fordyce Baker, of New York, took part in it. The contribution to which we now refer is a work by Dr. Thomas C. Minor, of Cincinnati, in which he enters into an elaborate examination of the relations of child-bed fever to erysipelas as observed in the United States in the census year 1870, and gives also a history of an epidemic of child-bed fever in South-Western Ohio in the winter of 1872. The number of deaths from erysipelas registered in the United States in 1870 was 3,162, and of child-bed fever 1,828. The greater number of the deaths, both from erysipelas and from child-bed fever, occurred in March, and generally these diseases appear to be most fatal in the States during the first quarter of the year. No class of population was exempt from them; but while the proportions of deaths from child-bed fever among coloured women and native-born white women were about the same—namely, 1 in 12,000 coloured, and 1 in 11,800 native-born white; the proportion of deaths from erysipelas among the coloured and native-born white population was as 1 to 3—namely, 1 in 39,000 coloured, and 1 in 10,500 white. But no such difference of incidence of the disease upon the two races as is to be inferred from these figures was observed during the war among the troops engaged in the field. There were no indications from the figures of any special distribution of the mortality in relation to the climatic conditions of particular districts. Deaths from the two diseases were recorded at all seasons of the year in the various divisions of the States, but it is to be concluded from a study of the whole series of figures that, in the absence of any epidemic tendency, a woman's ordinary chances of escaping child-bed fever are twice as good in summer as in winter or spring. Altitude appeared to exercise some influence upon the distribution of the deaths, for the greater number of deaths from erysipelas occurred at higher altitudes than those from child-bed fever. A comparison of the deaths with the state of season as to wetness or dryness disclosed no particular relationship in this respect. But an examination of the relationship of prevalence of the two diseases to each other brought out the following conclusions :—

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[1] Erysipelas and Child-Bed Fever. By Thomas C. Minor. M.D. Cincinnati, 1874.

1. Erysipelas and child-bed fever seemed to prevail together throughout all the States.

2. Any marked increase in any one locality of one disease was apparently accompanied by a corresponding increase of the other.

3. Where histories of past epidemics of either disease was obtainable from any of the States, the apparent connection of the two diseases was noticed by physicians at the time of such epidemics, and remarked on.

4. This relationship indicates that there is an ultimate connection existing between child-bed fever and erysipelas, and justifies the inference that in any place where erysipelas is found there will be found puerperal fever.

Proceeding to an examination of the results of an epidemic of child-bed fever in Cincinnati, Dr. Minor finds confirmation of the foregoing conclusions, and is enabled to push them further. From these results it followed that :—

1. The two diseases, child-bed fever and erysipelas, prevailed at the same time in the same localities.

2. Where an isolated death from child-bed fever was noted outside of the infected districts, a corresponding death from

erysipelas was noted in the same locality. This was almost invariably the case.

3. Infants die of erysipelas shortly after or before their mothers die of child-bed fever.

4. A few physicians attending child-bed fever cases and erysipelas cases at the same time, as exhibited by the death-register, were the most unfortunate in their practice.

5. Physicians having large obstetric practices, but who were known to be believers in the close connection of child-bed fever and erysipelas, returned few death-certificates from either cause.

6. These results confirm the opinions of the intimate connection between the two diseases.

But it may be said that a not less close connection might be shown between the prevalence of child-bed fever and typhus and scarlet fever. This view Dr. Minor subjected to the test of the data he possessed on the subject from the census report and other sources, and without denying that some connection may exist, he has formulated the following propositions:—

1. Epidemic typhus is not always associated with an outbreak of child-bed fever.

2. Epidemic scarlet fever is very seldom associated with an outbreak of epidemic child-bed fever, or *vice versâ.*

3. Epidemic erysipelas is *invariably* associated with an outbreak of epidemic child-bed fever, or *vice versâ.*

If it be asked what was the bond of the connection between erysipelas and child-bed fever here maintained, the same conclusion is suggested by the American as by the English experience—namely, chiefly *the doctor and the nurse.* It is mainly a question of the communication of erysipelas to the woman in child-bed by contagion, not a question of some occult relationship. This is not the whole question of connection, but it is the essential portion of it.

THE PRACTITIONER.

SEPTEMBER, 1875.

Original Communications.

ON THE DIFFERENCE OF THE ACTION OF INDUCED AND CONTINUOUS CONSTANT CURRENTS ON THE NERVOUS SYSTEM.

BY DR. ONIMUS, OF PARIS.

(*Continued from* p. 106.)

INDUCED and continuous currents having a different action on organic tissues—the muscles, for example — it is intelligible that this difference may be still more marked for tissues so impressionable as the nerves, and which are so sensitive to the least differences in the kind or strength of stimuli.

The mode of action of induced currents is easy to comprehend, since each time that they are transmitted they give a shock which constitutes a stimulus. The intensity of the stimulus thus produced is proportionate to the violence of the shock or succussion caused by the current. The two induced currents differ from each other in their action on the nervous system; the opening current is always a stronger stimulus, not only because it is of higher tension, but because, as we have seen, it is of much shorter duration. It is an electro-physiological law that electrical excitation is intense in proportion to the shortness of its duration; or, in other words, the excitation of a nerve depends less on the absolute amount of tension of a current than upon the changes of this tension from one moment to another.

The short duration of induced currents thus explains their powerful action on the nerves; they rapidly and sharply modify the molecular condition of the nerve. They have no electrolytic action on the nerves, and if they ultimately cause the nerve to lose its excitability, this is not owing, as in the case of continuous currents, to a chemical alteration, but to the succession of shocks they have caused.

The effects of discharges from a Leyden jar are exactly similar in their essential characters with those of induced currents.

When two rheophores are placed on a nerve, contraction of the muscles innervated is caused by each shock of induced electricity, whether the current passes in the ascending or in the descending direction (the latter, however, giving the most extensive contractions); but when the two rheophores are placed upon two different nerves, and the current is very feeble, the shock only occurs on the side which responds to the exit of the induced current. (Chauveau.)

The therapeutic consequences that flow from these physiological facts are very easy to understand; and they are at the same time so simple that it is useless to insist upon them here. It is not the same with continuous currents, which have given rise to a large number of theories and hypotheses. Since the discovery of the pile, experimenters have been much occupied with this question, who for the most part have not been contented with the study and discovery of special facts, but have endeavoured to lay down general laws. For some years past the works of M. du Bois-Reymond have led all physiologists to admit the identity of the nervous influx and the electrical phenomena that exist in the nerves. The laws of electrotonus discovered by Pflüger have tended to confirm in the minds of practitioners the theory of Du Bois-Reymond, and scarcely any attention has been paid to the objections made to them originally by Becquerel and Matteucci.

M. Cyon, in his work on the principles of electro-therapeutics,[1] in which he has given so full an exposition of these questions of electro-physiology, does not hesitate at all to state that the

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[1] Cyon, "Principes d'Électrothérapie." J. B. Baillière. Edit. Paris, 1873.

"identity of the vital force, and of the electric properties and capabilities of the nerve, cannot be admitted." "Supposing even," he goes on to observe, "that we are determined not to regard the electro-motor properties of the nerve *as being the cause* of the nervous functions themselves, as being that which we have so long named nerve force, no person will doubt that the electro-motor properties exert a very great influence upon the functions of the nerve, at least none of those who are acquainted with the present state of neuro-physiology, and especially amongst those who are familiar with the doctrine of electrotonus."

All the German physicians have made the laws of electrotonus the basis of the effects excited by electric currents on nerves and on muscles; and Dr. Cyon even believes that electrotonic differences may be recognised between the healthy man and choreics and epileptics.

We have already endeavoured to show how these theories of electro-physiology rest on facts which are exact, it is true, but the interpretation of which has been erroneous. The importance of these questions compels us to complete our criticisms, and the more so since their application to therapeutics is intimately connected with these researches.

OF ELECTRIC CURRENTS IN THE TISSUES.

Galvani was the first who discovered that an electric current existed in animal tissues; and his observations were corroborated and completed by Matteucci and Du Bois-Reymond. The last named experimenter determined, with much exactitude, the different laws that govern the currents in nerve and muscle. The principal law may thus be expressed:—

Each point of the longitudinal surface of a nerve or of a muscle is positive in relation to the points of the transverse surface.

Must we then conclude, with Du Bois-Reymond and his school, that a special production of electricity takes place in the muscles and in the nerves? And do these currents constitute the nervous agent or nerve-force? In reply, it may be said that similar electrical phenomena are found in all tissues; and from the time of the very first publication of these researches, M. Becquerel observed the same phenomena in all animal and in all vegetable tissues. In a potato the same currents exist, passing in the same direction. Yet here there is neither contraction nor nervous influx.

Since then M. Becquerel has found similar electric currents in the bones, in the tendons, and in arteries. M. Cl. Bernard had in like manner previously discovered the cutaneous and musculo-cutaneous currents. In a word, there is no living organic substance which does not manifest these electric currents.

The cause of these currents is the chemical action taking place in the tissues, and it is well known that all chemical action is accompanied by a disengagement of electricity. Hermann has pointed out also that all the laws of the muscle and nerve current can be explained by the different chemical reactions that take place at the points of the longitudinal and of the transverse surfaces. This being more exposed to the air, decomposes more rapidly, and every point where the decomposition has taken place becomes negative in regard to those which are unaffected or only slightly affected: hence the longitudinal surface is positive in regard to the transverse surface.

The experiments of M. Becquerel have been the most searching in this respect, for on reducing the muscular tissues to a paste, he obtained, on connecting the internal with the external surface, a current which passed from the interior to the exterior, that is to say, from the part which was less oxidised to that where it is more oxidised, in consequence of its being in contact with the external air. Moreover, if the muscles are plunged into nitrogen or into hydrogen, there is in the first instance a current passing from the interior of the muscles to the exterior, which after a little while diminishes, becomes *nil*, and at last manifests itself as a current passing in the opposite direction. This reversal of the current can only be attributed to the difference of oxidation of the parts of the muscle, for the internal parts of the muscle still contain oxygen when the surface is completely deprived of it.

Thus there is nothing special in the electric currents that are observed in the nerves and in the muscles; the same currents are met with in all the tissues, and the differences in the chemical actions that are taking place explain their direction.

These electric phenomena are almost all governed by the laws of electro-capillary currents, the principle of which, discovered by M. Becquerel, is that two solutions of a different nature, capable of conducting electricity, and separated by an organic membrane or by a capillary space, constitute an electro-chemical circuit.

NEGATIVE OSCILLATIONS OF THE CURRENT.

The variations that occur in the electric current during excitation of the nerve have been advanced as proofs of the identity of the nervous influx and the electro-motor properties of the nerve. Let us see in what this phenomenon consists :—The electric currents proper to the nerve or muscle disappear when the nerve is excited or the muscle is made to contract.

From this the conclusion has been drawn that the nerve in a state of repose possesses different electro-motor properties than when in activity, that the performance of its function brings about a corresponding modification of its electro-motor properties.

This phenomenon however becomes perfectly intelligible if we admit that the divergence of the needle is due to a difference of chemical activity at the points in connection with the galvanometer. In repose certain points being more actively oxidised than others in consequence of their exposure to the air, a current is produced as a result of this inequality of oxidation—a differential current which is proportional to this relation—whilst in the active performance of function the chemical phenomena become identical in all parts of the nerve or muscle; the internal oxidation of the tissue is effected at all points, and as the current established in repose is only the result of a difference of oxidation, it is evident that it ought to disappear as soon as this difference itself disappears.

We have already referred to the experiment of M. Becquerel, in which the current which passes at first from the interior of the muscle to the exterior, falls to zero, and then becomes reversed. The time during which the current is *nil* corresponds to that during which the decomposition takes place to an equal amount, externally and internally. The existence of the current demonstrates a difference in the chemical activity of the points examined. By our own researches on man we have been able to verify the truth of this proposition. In patients affected with very complete anæsthesia, in whom the platinum electrodes could without any pain be buried in the muscles, we have observed the following facts[1]:—

When the needles are each buried in a muscle, and the muscles are in the same anatomical and physiological conditions, no current is observable, the needle of the galvanometer, however sensitive, remaining stationary; but if one of the muscles be made to contract, the other being quiescent, a divergence of the needle immediately occurs, indicating that the muscle in contraction is negative as compared with that in repose. In this case we obtain, then, the same phenomenon as in the case of a single muscle, when the external surface is negative as compared with the internal, which is attributable to the greater chemical activity of the part exposed to the air. In the same way in comparing two muscles, that in which the chemical activity is greatest, that is to say, the one which is contracted, becomes negative in relation to that in which the chemical phenomena are less, that is to say, which is in a state of relaxation.

The same phenomena are observed to occur on comparing pathologically contracted with healthy muscles. Thus, on connecting pathologically contracted and healthy muscles with a galvanometer in a state of repose, the latter are positive as compared with the former; but if the healthy muscles are excited to contract and maintained in a state of contraction, the current weakens, becomes reduced for a moment to zero, and then undergoes reversal. In analysing these phenomena in regard to the nutritive activity taking place in these organs, their perfect accordance with our proposition is obvious: a living tissue assumes in relation to the very same tissue the negative electric sign when the phenomena of oxidation are more pronounced in it.

Thus, in the experiment above given, the pathologically contracted muscle, in which the phenomena of oxidation in consequence of this contracted state are more intense, is negative in relation to a healthy muscle in a state of relaxation; but if this last augment its chemical activity by a prolonged contraction, the current at once disappears, and then undergoes reversal, because the contraction of a healthy muscle is accompanied by more energetic processes of oxidation than the pathological contraction of other muscles.

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[1] Our researches were made at the Hôpital de la Salpêtrière on patients under the care of M. Charcot, and we take this opportunity of thanking M. Charcot for his courtesy.

Additional evidence in favour of our explanation is found in the difference of reaction that may be observed to take place in this point of view between the different kinds of contracture. A muscle that has long been pathologically contracted, the permanent contraction of which is in general accompanied by a diminution of heat and of circulation, instead of being negative in relation to other muscles, is, on the contrary, positive. There is less nutritive activity in it than in a muscle in a state of relaxation.

We may admit the existence of two kinds of contractions —an active and a passive.

In the first, the nutrition of the muscle is still energetic, the contraction is strong, and in all respects still resembles physiological contraction. In passive contraction, on the contrary, there is, as it were, a physical shortening; and in all cases all the other symptoms show a great diminution in the processes of nutrition. It is in this case that we find that the electric condition, instead of being negative, as in active contraction, becomes positive when compared with healthy muscles in repose.

Moreover, in active contraction we have always been able to ascertain the occurrence of further shortening on electrifying these muscles with induced currents, which does not take place in passive contraction. In this last no alteration of form takes place, notwithstanding the application of the most energetic electric stimuli. These two kinds of contraction may be observed in the same patient. Passive contraction may persist for years, and resist every kind of treatment; whilst active contraction, in which a negative electric state occurs, and where the application of electricity still occasions a shortening more considerable than that caused by the pathological stimulus, recover.

The chemical actions that take place in the living organism depend upon, or rather constitute, nutrition; on the other hand, the electric currents which occur naturally in living tissues, being the result of chemical actions, it may be concluded almost *à priori*, that the electric currents would be energetic in proportion as the trophic activity of the organs is greater. We have in fact observed, in patients whose limbs were paralysed or contracted, that the natural electric currents were much more feeble than in the healthy limbs. To show this, however, cases of long standing must be selected, for such affections do not exhibit these phenomena at the outset and on the same individual; it is necessary to compare, as far as possible, thoroughly affected with thoroughly healthy limbs.

ELECTROTONIC STATE.

If a galvanic currrent be made to traverse any portion of the course of a nerve, this presents throughout its whole length a change of state which is manifested by an augmentation or a diminution of its proper electric currrent. If the current of the battery passes in the same direction as that of the nerve current, this is augmented in intensity; it is, on the contrary, diminished if the direction of the two currents is inverse. Then at the moment that a voltaic current (P, Fig. 4) is made to traverse any portion of the nerve, a current in the same direction is produced throughout the whole length of the nerve, both below and above the point electrified.

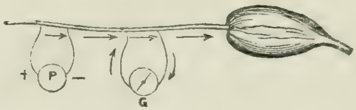

FIG. 4.

The electric current, which is thus developed outside the points to which the poles are applied, does not exist when a current is passed through a metallic rod; this phenomenon is then extraneous to the physical laws of electricity, and is peculiar to the nerves. But Matteucci, in 1868, demonstrated that exactly the same phenomena are obtained with all bodies capable of undergoing electrolytic action, as with sections of potato, stalks of cabbage, with muscles, and with nerves. In the case of the nerves it is by no means requisite that they should be fresh ; it is sufficient if their structure is not altered, for the phenomena of electrotonus disappear when the nerve is compressed at any point in such a manner as to destroy the homogeneity of the cylinder axis. Matteucci believes, from experiments made on such substances as moist chalk or vegetable tissues, which give secondary currents much more energetic when they are traversed longitudinally by a metal wire, that the cylinder axis enjoys in the nerve the function of being a better conductor, and that it is on it that the products of electrolysis are deposited ?

The principal experiment of Matteucci consists in covering a platinum wire, about a yard long and a millimetre in diameter, with two layers of hemp or cotton. This wire is dipped in salt water, and arranged as in the experiment for electrotonus.

As soon as a current of electricity is applied at a given point, a strong electrotonic current is obtained even at a distance of 30, 40, or 60 centimetres (one to two feet) from the electrodes of the battery.

It thus appears that the electrotonic state is by no means a special property of the nerves, and that consequently all theories resting on this view have no solid foundation. We may even cite an experiment we have made ourselves, and which shows that phenomena, analogous to those of electrotonus, exist in all the tissues in the living subject.

In patients affected with anæsthesia, if the platinum wires be inserted into the fore-arm (at *a* and *b*, Fig. 5), and be then connected with a very sensitive galvanometer G, a divergence of the needle is obtained on electrifying the patient with a current of 10-15 Daniell's elements at the points P and N, and even on applying the poles at a still greater distance on the back. The divergence of the needle, in one sense or the other, depends on the current of the pile acting near the shoulder, and is always in relation with the direction of this current.

We see, then, that the electrotonic state—that is to say, the transmission of the current beyond the points of application of the electric currents, is far from being a property special to the nerves. It is impossible, therefore, to draw from this phenomenon any conclusion in regard to the supposed electro-motor modifications that the nervous molecules undergo at the moment of performing their function.

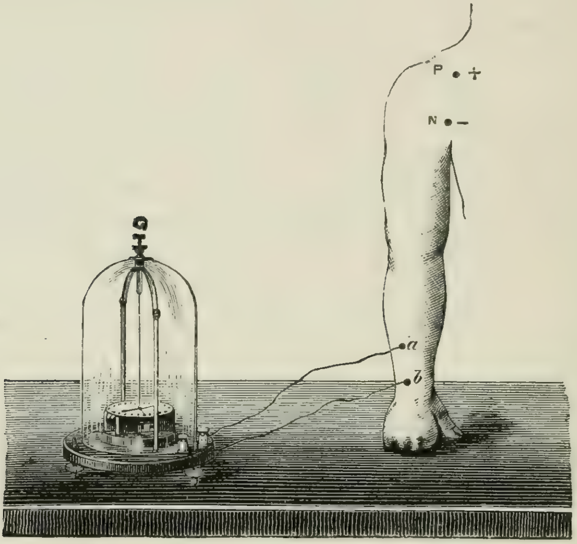

FIG. 5.

CATHELECTROTONUS AND ANELECTROTONUS.

Pflüger has endeavoured to complete the indications furnished by Du Bois-Reymond, and the fundamental experiment on which he has founded his theory consists in electrifying a nerve through a determinate portion of its length, and then examining the state of irritability of this nerve in its different parts. He has observed that in these conditions the nerve is divided into two parts: in one, which adjoins the negative pole, the irritability is augmented; in the other, which is around the positive pole, the irritability is, on the contrary, diminished. Pflüger termed the zone where the irritability is augmented, and which is around the negative pole, the Cathelectrotonic zone, and that in which the irritability is diminished, and which is in the neighbourhood of the positive pole, the Anelectrotonic zone.

It is on this fact that all the theories of electrotonus have been established, though the explanation of this phenomenon is one of the simplest and most elementary in physiology.

If there be a loss of excitability near the positive pole, and augmentation of excitability around the negative, it is due, as Matteucci and Becquerel have stated, to the nerve in contact with the negative pole becoming charged with hydrogen and alkali.

Let me here once more state the fact that we have on several occasions alluded to, and which we have in the preceding memoir adduced against the experiments of M. Vulpian, that a galvanic current never traverses a nerve, especially when it is in direct contact with this nerve, without producing a manifest electrolytic action an action which extends beyond the poles and which is particularly pronounced at the points of application. The passage of a galvanic current in a tissue and the electrolytic action are absolutely inseparable events; the one cannot take place without the other.

But in these conditions attention ought to be paid not only to the influence of the passage of electricity, that is to say, to the molecular change taking place throughout the whole circuit, but in addition to a chemical action which is an important cause of molecular change, and which takes place especially at the points where the poles are applied.

But it has long been known in physics that dilute acids diminish the excitability of nerves, and that dilute alkalies augment this excitability. There is nothing astonishing, then, in this excitability being augmented around the negative pole where the alkalies are formed, or in its being diminished around the positive pole where the acids appear. This effect is produced even with a very feeble current, as may be seen by the reactions of litmus paper.

It is perfectly useless, then, to seek in these hypotheses on the electromotor state of the nerve molecules the explanation of phenomena which solely result from the physical and chemical effects of the currents.

Attempts have been made to find a confirmation of the theory of Pflüger in the alternations of contraction that are produced by electrifying the nerves with ascending and descending currents.

The law of Pflüger bearing upon these commotions may be formulated as follows :—

A certain extent of nerve being given, this is excited by the occurrence of cathelectrotonus and by the disappearance of anelectrotonus, but it is not excited by the disappearance of cathelectrotonus and the appearance of anelectrotonus.

"The cause of this law," says Cyon,[1] "is easy to understand if it be remembered that on the appearance of cathelectrotonus and on the disappearance of anelectrotonus the nervous molecules pass from a state of lesser to a state of greater mobility, whilst the converse takes place on the disappearance of cathelectrotonus and on the appearance of anelectrotonus. The law of commotion of Pflüger may be expressed in a modified form as follows :—The nerve is excited when its molecules pass from their ordinary state to a state of greater mobility (cathelectrotonus), or when they pass from a state of less mobility (anelectrotonus) to their ordinary state. The nerves do not experience any excitation, on the other hand, either on their passage from their ordinary state to a state of less mobility (anelectrotonus) or during their passage from a state of greater mobility (cathelectrotonus) to their ordinary state."

However ingenious and seductive this theory may be, we shall proceed to show that all these alternations of commotions which since the time of Galvani have attracted the attention of observers, may be explained by attending to two facts that are perfectly well established and easy to verify.

The first of these facts is—

That the descending or direct current is that which acts most energetically on motor nerves; or, in other words, *the descending current is that which most strongly excites muscular contractions.*

The second of these may thus be expressed :—

Every current, when applied to a nerve, determines a current in the opposite direction at the moment of its cessation.

We have already insisted upon these two phenomena elsewhere,[2] and we could only repeat here what we have already said. We shall only add, that the influence of the descending current is demonstrated by a great number of experiments, and that this action is exerted both on peripheric nerves and on the spinal cord and apart from all electrolytic action. This influence of direction is a very important point to consider, but is one which we cannot insist upon here, since it is beside the question under discussion.

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[1] Cyon, "Principes d'Électrothérapie," 1873, p. 103.

[2] "Traité d'Électricité," p. 229, *et seq.*

The following Table, which is almost the same as that given by Nobili, indicates the principal results that are obtained on electrifying a motor nerve:—

		DESCENDING CURRENT.	ASCENDING CURRENT.
First period	Closure	Contraction	Contraction.
	Opening	Contraction	Contraction.
Second period	Closure	Contraction	Feeble contraction.
	Opening	Feeble contraction	Contraction.
Third period	Closure	Contraction	○
	Opening	○ [1]	Contraction.
Fourth period	Closure	Contraction	○
	Opening	○	Feeble contraction.
Fifth period	Closure	○	○
	Opening	○	Feeble contraction.

In regard to the current which is formed at the moment when the principal current ceases, we have given the explanation of it in the first part of this memoir (on currents of polarisation). This current may be more intense than that which has been applied if the electrolytic action is sufficiently strong, and especially if it have been prolonged for some time. This current often lasts for several minutes; but its maximum occurs at the moment when the polarising current ceases.

Thus, each time that a nerve is electrified with an ascending current there is formed at the moment of breaking a descending current in the interior of the tissues, and reciprocally at the moment of breaking a descending current an ascending current is formed.

This being granted, we shall now proceed to examine the principal experiments that have been made upon the nerves, and we desire to point out at the outset that these experiments for the most part have been made by applying the poles directly to the nerves, with the consequent production of local electrolytic actions. When on the contrary we study, as M.

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[1] Signifies no contraction.

A. Bernard has done, the action of currents on the nerves without determining local chemical alterations, we always provoke with either an ascending or descending current, a contraction on closure of the current and occasionally on opening. This results from the fact that the current on closure is that which under these conditions provokes most rapidly changes in the intimate molecular state of the nerve, which is always the principal cause of the irritation of the nerves.

Thus, in the first period, the excitability of the nerve being undiminished, contraction of the muscle takes place as soon as its molecular state undergoes alteration, which occurs both at the moment of closure and of breaking, then by degrees contraction only takes place on the closure of the descending current and on the opening of the ascending current.

But the opening of the ascending current is equivalent, as we have said, to the formation of a descending current; that is to say, that with these two directions the muscle contracts simply with a descending current.

In the same way, at the moment of breaking a descending current, an ascending current is formed which remains without action on the muscles, like the ascending current of the battery.

At the fourth period the ascending current does not give the contraction of opening, except under the condition that the current of the battery has been applied for some time, for then the polarising current (descending) becomes more energetic. Moreover at the fifth period, when the current of the battery no longer gives any contraction, it may still be sometimes obtained by the polarising current.

We thus see that all these alternations are subordinate to a single and simple law, as soon as we take into consideration the formation of polarising currents and the greater action of the descending current.

This alternation can be rendered very intelligible by the two subjoined tracings (Figs. 6 and 7) which have been obtained by electrifying the facial (but already exhausted) nerve of a rabbit. The tracing represented in Fig. 6 has been obtained by electrifying the nerve with a descending current. It is seen that contraction only occurs at the moment of the closure of the current; and it may at the same time be observed that the muscle does not immediately resume its normal state, and that during the whole period of the passage of the current it remains slightly contracted (the electric current was applied at A and removed at B). This slight contraction, which persists as long as the current passes, is connected with the chemical irritation which occurs during this period.

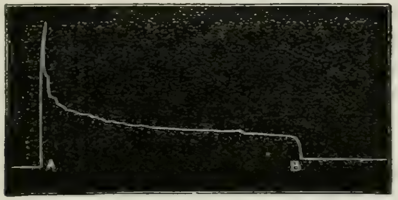

FIG. 6.

The tracing (Fig. 7) shows the contraction with the excitation of the nerve by an ascending current; here the real contraction only takes place at the moment of closure (? formation of a descending current). Even in its graphic form the contraction resembles that which occurs at the moment of closure of a descending current.

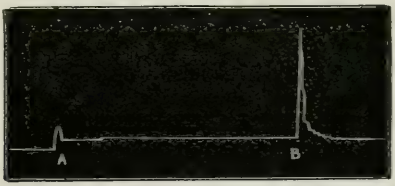

FIG. 7.

Thus, if we examine all the other experiments that have been made with galvanic currents on the nerves, we find everywhere the same explanation holds good, even for the most complicated phenomena.

It is thus in regard to the law of alternation of Volta and of Ritter, when a nerve is electrified for some time the excitability of the nerve is diminished for currents passing in the same direction, whilst it is augmented for those passing in the opposite direction. This law is easily intelligible, because under these conditions the currents passing in the opposite direction come to reinforce and add themselves to the polarising currents, whilst currents passing in the same direction are enfeebled by these same polarising currents, which always run in the opposite direction.

It is equally well known that when a nerve has been traversed for some time by an ascending current, tetanus frequently supervenes on breaking it, which lasts for a longer or shorter period. This tetanus, or this series of contractions, is due to the formation of descending polarising currents, which, having a certain duration, produce tetanic irritation.

The law of alternation of Volta, has been slightly modified by Rosenthal, who thus expresses it:—"There is augmentation of irritability at the moment that the current which is in action is interrupted, and at the moment that a current passing in the opposite direction is produced. On the contrary, there is a diminution of irritability at the moment when a current passing in the same direction as the first is produced, and at the moment when a current in the opposite direction is interrupted. This law, to sum up, states that there will be augmentation of irritability each time that, on the cessation of the current, a current is made to act in the same direction as the polarising current, for they add themselves together; there will be diminution of irritability each time that a current is made to pass having a contrary direction to the polarising currents for they then oppose one another."

We can just as easily explain induced or secondary contractions: the phenomena are invariable and always depend upon the two principles we have enunciated above.

M. Cyon,[1] has made some very curious and very interesting experiments on man, in which he has found that the amount of contraction was greater during the passage in the nerve of a descending current, and more feeble with an ascending current. M. Cyon has endeavoured to show that these facts prove the existence of electrotonus in man; but his experiments, as he himself states, succeeded only occasionally, and often gave contradictory results, especially when the irritation was applied above the region traversed by the current.

On analysing the four experiments of M. Cyon which gave satisfactory results, we find only the proof of the greater action of he descending current on the muscular contractions.

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[1] *Loc. cit.* p. 130, *et seq.*

This is in point of fact the outcome of all the experiments that have been made upon the peripheric nervous system, and it deserves to be brought out in strong relief, for not only does it give the explanation of a whole series of electro-physiological experiments, but it is important in practice in its therapeutical applications.

We have lingered long on these questions of electro-physiology because they have been widely discussed; and for more than thirty years they have governed physiology and even therapeutics. We have seen that all the facts in succession on which the theories rest admit of an easier explanation, and one which is more comformable to the laws of electric currents.

Is it necessary, then, that we should place no value upon all these phenomena, and hold that the electric currents that exist in the tissues are of no importance? By no means, for we believe on the contrary that the question is a highly important one; only in place of limiting these electrical currents to the nerves and to the muscles, we have seen that they are the property of all the tissues. They everywhere accompany chemical reaction and consequently nutrition. They are the result of changes taking place in the organic substratum and constitute one of the manifestations of life. It may now even be said that every living element not only nourishes itself and produces heat, but also that it determines the productions of electrical currents. We have already endeavoured to show the influence of the currents that can be artificially made on the natural electrical currents; it is exhibited in a dynamical change, which leads as a consequence to an augmentation of nutrition.

In regard to the nervous system, the great mobility of the molecules of that system, and the direction in a determinate sense of the influx of nerve force, explains the powerful influence of electrical currents: and as these electric currents themselves consist in a flow always taking place in a definite direction it is obvious that according to their direction they will exert a variable action. We cannot dwell here on all these facts, which are outside the limits of this essay; but it is sufficiently evident that in the case of the nervous system there are differences of action, not only between induced and continuous currents, but that the influence of these is not identical as soon as the conditions of production and of direction are not the same.

The therapeutical applications may easily be understood from these data, without its being necessary to lay them down in an absolute manner for each special pathological case. It may be said generally that there is no agent so powerful as induced currents to cause deep-seated, energetic, and sudden excitation. They have an exciting action very superior to continuous currents, and they ought always to be employed when it is desired to excite motor and sensory nerves; they act powerfully on the cutaneous nerves, and they are preferable to every other agent when it is required to produce reflex acts.

Continuous currents, on the contrary, change the molecular state of the nerves more slowly, but their action is more profound, more gentle, so to speak, even at the moment of their interruption; the commotion that they cause in the nerve is less mechanical, but has a polar influence more marked and more durable. In a word, their action is tonic and slightly stimulating, whilst that of induced currents is irritating and exciting.

Lastly, we here find again the applicability of the principles we have already given in a former paper, the chief of which may thus be explained:—Induced currents ought not to be applied to the central nervous system, whilst continuous currents should be applied almost exclusively to the nerve centres.

NITRITE OF AMYL IN FACIAL NEURALGIA.

BY GEORGE H. EVANS, M.D.,

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FINDING that one of the uses of nitrite of amyl does not seem to be as generally known among the medical profession as it should be, I think it may be worth while to put on record the few cases of this use of the drug that have come under my notice.

It occurred to me about three years since, on first becoming acquainted with the effect of inhalation of nitrite of amyl, which was then said to flush the small vessels (first of the face and then of the trunk) by paralysing the vaso-motors, but which at all events caused flushing of the face, &c., that it might possibly give relief in some of those cases of facial neuralgia which are obviously connected with, if not dependent on, anæmia. A case occurred which gave me an opportunity of testing this. A girl applied at St. Thomas's Hospital one Thursday morning about 11 A.M., trying to get some relief for neuralgia, which had prevented her (she said) from sleeping since the previous Saturday. She was evidently in considerable pain, and markedly anæmic. Hoping for a possible immediate effect, I made her inhale some nitrite of amyl. It took rather a longer inhalation than I expected to produce the usual flush: however, it came, and she then said that she felt a throbbing and a beating in her head, but that the pain was subsiding. In a very few minutes she said the pain had left her. I was very doubtful about the amyl producing anything more than simply temporary relief, so I told her to come again if the pain recurred. She did not come again to me; but she attended Dr. John Harley (she was already an out-patient under him) on the Saturday, and said she had had no pain since the inhalation I did not see her again.

The next case in which I used it for this purpose was that of an anæmic young woman who was in St. Thomas's Hospital with acute rheumatism, and who during her convalescence suffered much from facial neuralgia, which she said had tormented her since childhood. On her the inhalation of amyl did not produce quite so striking an effect as on the former patient; but it invariably gave her relief, so much so that she said: "I wish you would let me take that little bottle out with me; I have tried all sorts of things, and never found anything do me so much good as that."

The third case I have to mention is that of a young lady who was, in September last, suffering from very severe neuralgia, whom I knew to be generally anæmic, and whom I noticed to be much more anæmic than usual at that time. She told me she was always paler when these attacks came on. I gave her some amyl to inhale: it was some time before it produced any effect, visible or otherwise; but as soon as it had produced a slight flush, she said the pain was relieved. I saw her three weeks later, and she told me that she always prevented the attacks of neuralgia by inhaling amyl when she felt they were coming on. One of her sisters, who was not anæmic, incautiously one day sniffed at the amyl bottle, probably because I had especially cautioned my patient against allowing any of her sisters to use it; and immediately her face became most painfully flushed, and she felt sufficiently uncomfortable to prevent her repeating the experiment. I think, from what I have seen of its use, that anæmic people (as one might expect) can bear very much larger doses of nitrite of amyl than those who are not anæmic.

SOME REMARKS ON PARACENTESIS OF THE CHEST.

BY HENRY BARNES, M.D.,

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There are few subjects in practical medicine of greater importance than the proper treatment of effusions into the pleural cavity, and yet there are few which have given rise to more discussion and to greater differences of opinion. It is my intention in the present paper to discuss the value of paracentesis of the chest, to consider the class of cases in which the operation is suitable, and the objections which have been urged against it, and then to make a few remarks on the best method of performing it. It cannot be considered a new operation, as specific directions for performing it in three different ways were laid down by Hippocrates, who recommended that the chest should be opened either by perforating a rib or using either a bistoury or the actual cautery for making the opening in one of the intercostal spaces. Although the subject has been treated of by most of the older writers, it is not necessary, for practical purposes, to go back into its history for more than thirty years. Until that time the operation was only looked upon as a last resort, and performed often when the patient was *in extremis.* This was perhaps rendered partly necessary by the difficulties of diagnosis. The discovery of Laennec rendered the detection of effusions into the pleural cavity a comparatively easy matter, and it was not long before physicians, wearied by the long continuance of effusions into the pleural cavity, in spite of all ordinary measures of treatment, began more frequently to try the effects of paracentesis.

To Trousseau is due the credit of being the first in modern times to advocate its advantages, and his success was so remarkable that it at once challenged criticism. The chief opposition to the practice seems to have been based on the alleged danger of the admission of air into the pleural cavity; and another argument was that the operation was unnecessary and of no value, as, according to the law of Louis, acute pleurisy with effusion is never the immediate cause of death. This law although founded only on 150 cases of simple pleurisy terminating in recovery, was adopted by many physicians, and was not refuted until the appearance of an essay by Dr. Lacaze du Thiers, who demonstrated, by a large array of cases, that it is possible to die, and to die suddenly, from acute pleuritic effusion. Although many cases were published showing that the admission of air into the pleural cavity during the operation did no harm, the practice did not gain many imitators in this country until the publication of the results of Dr. Bowditch, of Boston, U.S. That gentleman had long deplored the uselessness of the treatment which allowed effusions into the pleural cavity to remain for many months, and the dangers attending large effusions, but it was not until the invention of the excellent suction instruments of Dr. Wyman, in 1850, that he saw his way to any improvement in his practice. Since that time he has operated on 270 occasions, and although he has met with grave accidents, such as tapping the lung, driving air into the pleural cavity by a careless turn of the handle, &c., he has saved a great number of lives, and has every reason to be satisfied with his practice. The publication of his results has had a good effect in this country; and although there are still some who, basing their objections on theoretical grounds, do not follow his practice,—all, so far as I know, who have tried it, speak of it in terms of great praise. Still it may, I think, be asserted that paracentesis is not resorted to as frequently as it should be, and there are difficulties in deciding upon the proper cases for the operation. With a view of helping to clear away these difficulties, and of encouraging others to follow the practice, I am induced to bring forward the results of my own experience, and in so doing I shall merely give the general features of the cases from my note-book. The first case is one of simple acute pleurisy in a young woman aged

20, who had generally enjoyed good health until about a fortnight before she came under observation, when, after exposure to cold she had a fit of shivering, followed by pain in the left side, short dry cough, and inability to lie on her left side. She did not take to her bed, but in a few days she noticed that she had difficulty of breathing, and that she could not lie on her right side. When examined her pulse was 90, respirations 38 per minute. There was arching of left chest, displacement of heart, apex beat being near right nipple, dulness on percussion over left chest which extended to the right of mesial line, and no respiratory sounds heard on left side except in supraspinous region. In spite of diuretics and purgatives the effusion increased, and in three days more there was distinct dulness in the supraclavicular region and urgent dyspnœa.

Paracentesis of the chest was resolved upon, and by means of Bowditch's syringe 66 ounces of fluid were withdrawn. The fluid was rich in albumen, but presented no opacity. Considerable relief was experienced by the patient. The dulness diminished, bronchial breathing was heard over the left chest, in a few days friction sound returned and the vesicular murmur gradually became audible, and the patient convalesced rapidly. The treatment after the operation consisted in the continuance of the diuretic medicines, a morphia cough mixture, and a blister to the side. The success of this case was sufficiently encouraging, and gave me hope for the future.

The next case to which I shall refer is one in which the pleural effusion came on during a severe and protracted attack of enteric fever. This is a not unusual and sometimes alarming complication of that disease. The case is as follows:—Wm. L., aged 19, a labourer, was admitted into the Carlisle Fever Hospital Feb. 3rd, 1871. Patient had been ill for a week previous to admission, and presented all the usual symptoms of enteric fever complicated with considerable enlargement of liver and spleen. He continued to have diarrhœa, a rather high range of temperature, a good deal of restlessness and delirium, but no symptoms pointing to the chest until the 16th, when he is noted as having a short irritating cough but no expectoration, and an inability to lie on the right side. There is also considerable effusion into the cellular tissue of the legs, abdomen, and scrotum; the hepatic enlargement continues. On the 18th there is general anasarca but no albuminuria; dulness on percussion over the whole of the right chest and distant respiratory murmur, and on the left side exaggerated respiratory sounds. Diuretics were freely given, and sinapisms and poultices applied. On the 20th the dulness on the right side of the chest is complete, but the hepatic dulness and general œdema diminished, dyspnœa beginning to be troublesome. On the 24th his condition was alarming. He was restless and excited and talking incessantly; pulse very feeble, breathing laboured, and absolute dulness over right chest extending to left edge of sternum. Paracentesis was resolved upon, and by the use of Bowditch's syringe forty-six ounces of clear straw-coloured fluid was withdrawn. The operation was suddenly suspended on account of the patient's extremely feeble pulse and tendency to fainting. The fluid on cooling formed a jelly-like mass, and a solid white coagulum on the application of heat. Shortly after the operation respiratory sounds were audible over the back of the right chest, and the intercostal spaces became visible to the eye. The patient's condition was certainly improved by the operation, and his breathing somewhat easier, although there was still evidence of a large amount of fluid in the pleural cavity. The febrile symptoms continued severe. There was a good deal of delirium, restlessness, and diarrhœa, but rather less general œdema. On March 1st the dulness over the right chest was almost absolute anteriorly, and again extended to the left edge of the sternum, there was also dulness posteriorly with distant tubular breathing along the spine. Paracentesis was again performed, and 56 oz. of serous fluid removed, but not quite so coagulable as on the last occasion. This operation was followed by a good deal of relief and the patient slept better, and felt a little stronger. Percussion posteriorly gave a tolerably clear note down to the level of the middle of the scapula. On the 4th the breathing was freer, and the area of clear percussion and natural respiratory sounds was increased. The diuretic was continued and the chest painted with iodine. The effusion, however, rapidly increased during the next two days, and on the 6th the right chest was found to be universally dull, the dulness reaching to the left edge of the sternum, and the breathing much distressed. He was again tapped and 123 ounces of fluid removed. It was darker coloured than on the previous tapping and not so coagulable. A small quantity of air entered the chest during the operation. Great relief followed and the patient expressed himself as feeling better and easier, and able to sleep well. On the following day the right chest was quite clear anteriorly, and normal vesicular murmur audible. Posteriorly there was clear percussion note as low as one inch below angle of scapula, and respiratory murmur feeble but natural. From this date he continued to improve. There was occasional slight effusion, but by the continual exhibition of diuretics (iron and digitalis) and the external application of iodine, its absorption was promoted. On the 20th the anterior chest resonance was clear and normal, but still slight dulness at base posteriorly. Although he continued for several weeks longer in the hospital, suffering from occasional exacerbations of fever, there is nothing further noteworthy in this case as regards the condition of the chest. In this case the effusion was very insiduous in its onset, and rapidly assumed alarming proportions. The operation on each occasion gave great relief, and on the last occasion when upwards of 6 pints were removed, the effect was marked and the chest complication ceased to cause anxiety.

The next case also occurred in the Carlisle Fever Hospital. R. L., aged 43, a gamekeeper, was admitted Aug. 21, 1872. Patient had been ill since the 12th, and among the ordinary symptoms of an attack of enteric fever he had frequent pains in the chest, but no chest complication was noted on admission. The fever was of a rather severe type, and ran its usual course. No symptoms occurred pointing to the chest, but it happened on the 5th of September, in examining his chest, that I found dulness over the left side of the chest, tubular breathing, and ægophonic resonance. On the 6th he began to complain of cough and shortness of breathing. On the 9th dulness was found extending as far as the right side of the sternum and displacing the heart, the apex beat being 4th right intercostal space, but the dyspnœa not urgent. Diuretics were freely given, and seemed to have the effect of slightly diminishing the amount of the effusion; but as the symptoms of fever subsided, it was found that a large amount of effusion still remained, and on the

23rd the dulness is noted as extending as far as the right edge of the sternum.

On the 30th there was modified percussion resonance over the left infraclavicular region, extending as far as the lower border of the second rib. During the month of October the febrile condition subsided, but there was little variation in the amount of chest effusion, and on the 25th of October it was noted that there was absolute dulness over the left chest both anteriorly and posteriorly, except in the supraspinous region, and the heart was pushed over to the right side. The diuretic remedies seemed to be acting freely, the amount of urine passed daily ranging from 4½ to 5½ pints; but at the end of the month, as blisters, the application of iodine to the chest, and the free administration of diuretics failed to do the amount of good expected, it was resolved on the 30th to resort to paracentesis, and 50 oz. of greenish yellow fluid were pumped out by means of Bowditch's syringe. The fluid was albuminous, and became solid on the application of heat. There was, however, a rapid reaccumulation, and the chest was again tapped on the 15th November, 47 ounces of fluid being removed. On the 26th it was noted that respiratory sounds were heard over the front of the left chest and over the upper two-thirds of it posteriorly. Measurement showed that the left was 2 inches less than the right side. Shortly after this the patient left the hospital and returned to his home in the country. He continued in delicate health, and did not gather strength sufficient to enable him to follow his work. Five months afterwards, while driving past his house I was called in to see him. I found that there was evidence of reaccumulation of fluid in the pleural cavity, and, taking with me the necessary instruments, on the following day I performed paracentesis, and withdrew 90 ounces of turbid serous fluid. After this, to use the patient's own expression, he never looked behind him, and rapidly got quite well.

At the present time, May 8, 1875, he states that his general health is good, that he works daily in the woods, felling trees, and that only after hard exertion he suffers from slight difficulty of breathing. There is only half an inch difference in the measurements of the two sides, the left being half an inch smaller than the right. The apex beat is almost in its normal position. There is slightly impaired resonance at the back of the left lung, but the normal vesicular murmur is heard fairly well all over the left chest, but more clearly at the apex than the base. The expansion of the chest walls is almost equal on each side. He never suffers from any cough, and feels himself able to do a tolerably fair day's work.

In this case I think the operation might have been performed with advantage at an earlier period. I was induced, however, to give a fair trial to the action of drugs; and, as the diuretics seemed to be acting freely, and the chest symptoms not causing anxiety, the operation was delayed. This is in accordance with the practice of Bowditch, who allows three or four weeks if the effusion is not very great, the dyspnœa not urgent, and the remedies seem to be having a beneficial effect. The objection to this course seems to me to be that it allows of the formation of adhesions binding down the lung and displaced heart.

In the following case the effusion was of a chronic character, and had probably existed for some months. The case is as follows: J. M. aged 20, admitted into the Cumberland Infirmary March 18, 1874. Patient states that he always enjoyed good health until twelve months ago, when he caught a severe cold, accompanied by slight cough and pain in right side. He was engaged at that time in a large house of business in London, but becoming unfitted for work by reason of his illness, he returned home to his friends in the country. Since then he has been delicate and has lost flesh considerably. The pain in the right side has been nearly always present, but the cough only occasional, and never severe. Has been repeatedly blistered and taken a variety of medicines; has suffered from difficulty of breathing on the least exertion, and a few days ago he had an alarming attack of dyspnœa, which led to his application for admission. On examining his chest it was at once seen that there was considerable arching of the right side, the intercostal spaces being obliterated and the measurement showing 17¼ inches on the right side, and 16 on the left. There was absolute dulness on percussion over the whole of the right chest, and the respiratory sounds were feeble and distant, bronchial breathing and bronchophony being heard over a limited area of the apex posteriorly. The heart was displaced slightly to the left, the apex beat being in the nipple line. There was also a loud systolic bruit, heard loudest at the apex.

The dyspnœa was considerable, and he was unable to lie on his left side. There were no other abnormal symptoms of moment present. On March the 20th, owing to the considerable urgency of the symptoms, it was deemed desirable to perform thoracentesis, and by means of the pneumatic aspirator 25 ounces of turbid serous fluid was withdrawn. The operation was then suspended on account of some blocking of the needle-trocar. The relief experienced by the patient was great, and he was able, immediately afterwards, to lie on his left side. His chest was freely painted with iodine, and diuretic medicines, previously ordered, were continued in increased quantity. In spite of this, however, there was a rapid re-accumulation of fluid, and on April 9, it was so extensive that the apex beat of the heart was two inches to the left of a perpendicular line drawn through the nipple. The aspirator was again used and 104¼ ounces of fluid withdrawn. Notwithstanding the continued exhibition of nearly all diuretic remedies in succession, and the repeated blistering of the chest with iodine and and liq. epispasticus, the fluid again and again accumulated, and between April 24, and July 25, inclusive, paracentesis was performed twelve times, the amount of fluid removed varying between 90 ounces on the former date and 7½ on the latter. After each operation the heart returned to its normal position, and as soon as its apex beat was felt to the left of the nipple line the operation was repeated. From a week to a fortnight elapsed between each aspiration. During the earlier part of July the chest continued to improve, the dulness became less and less, a friction sound appeared, and more natural respiratory sounds were audible over right lung. The cardiac bruit also disappeared. He was discharged quite well on August 5, but he presented himself again for examination on the 17th November, when the following note was taken. The heart is in its normal position. There is no bruit. The resonance over the chest is everywhere good, except at right base where it is still slightly impaired, and natural respiratory sounds are heard fairly well all over, except at base where they are still feeble. He never suffers from any chest symptoms, and has to-day just returned from a thirty miles run with the beagles, and feels no worse for his exertions.

July 10, 1875. Has been in London during the last seven months, and has continued quite well, and never experienced any difficulty of breathing or suffered from any chest symptom. The physical signs are the same as at last report. This case illustrates very well a fact pointed out long ago by Sir Thomas Watson, namely, that when a serous membrane has long been stretched by its contents its natural absorbing power is diminished; and it is probably due to this cause that the cure was so protracted and so many tappings rendered necessary.

In the foregoing cases the fluid removed was always of a serous character, but when from delay or natural debility of constitution the fluid becomes purulent, the results from the operation are sometimes not less satisfactory, as the following case will show. On the 9th Sept. 1874, I was asked by Dr. Maclaren to see in consultation with him, a young lady whom he was attending for Dr. Lockie, during that gentleman's absence on his holidays. She was 19 years of age, and had been ill for six weeks, but had only returned home a few days before she was seen. She had caught cold after bathing, and had suffered from frequent and very distressing cough, pain in the chest, great restlessness and delirium. She was much exhausted, very feeble, had almost constant cough and profuse perspirations. A month previously she is stated to have had two attacks of shivering. On examining her chest it was found that there was complete dulness and almost entire absence of breath sounds over the left chest, except under the clavicle, where there was skodaic resonance, and some tubular breathing audible. The cardiac impulse was felt an inch to the right of the lower part of the sternum. The left chest measured above the mamma 16½, and the right chest 15 inches. She was very delirious and restless, and much exhausted with cough, difficulty of breathing, and pain in her chest. The morning and evening temperature only registered 100° F. I quite concurred with Dr. Maclaren in the propriety of operating immediately for her relief. The results of the physical examination pointed to the presence of a large collection of fluid in the pleural cavity, and although doubtful of its character, the necessity for immediate interference was obvious. Paracentesis was at once performed, and by the use of Dieulafoy's aspirator 60 ounces of perfectly inodourous pus were withdrawn. The pulse improved in character during the operation and the patient fell asleep before it was concluded. By the use of iron tonics, a liberal diet and port wine, the general condition somewhat improved, and when I saw her again on the 14th she was decidedly stronger, and had slept better. There was evidence of re-accumulation of fluid. The line of absolute dulness posteriorly reached as high as the middle of scapula, and as high as the 4th rib anteriorly. The cardiac apex impulse was on the right of the sternum. Paracentesis was again performed and 27 ounces of pus withdrawn. Towards the latter part of the operation a small quantity of blood escaped. I saw her again on the 21st. She was still restless, did not sleep well, and complained of a good deal of pain in her left side. The heart sounds were heard loudest behind the ensiform cartilege. There was clear percussion note over left front of chest, but feeble respiratory sound; posteriorly dulness reached as high as the angle of scapula. The aspirator was used for the third time, and 19 ounces of pus stained with blood, withdrawn. The blood was equally mixed with the pus rendering it of a deep red colour, and was probably effused at the last operation. The relief experienced was considerable. The breath sounds became clearer, and the dulness on percussion less marked. There was considerable contraction of left chest, and it measured $1\frac{1}{4}$ inches less than the right. On the 28th a fourth and last operation was performed, and about 8 ounces of fluid removed, about one-third of which appeared to be blood and the remainder pus. On account of the patient's extreme sensitiveness and fear of pain, this operation was performed while she was under the influence of chloroform.

From this date she steadily improved. Under the continued use of tonics, a liberal diet, and careful nursing, she gradually gathered strength, and the chest symptoms gave no further trouble. Dr. Lockie has kindly furnished me with a note of her condition on April 19, 1875. It is as follows: "General health good. Girth of chest, $30\frac{3}{8}$; right, $15\frac{5}{8}$; left, $14\frac{6}{8}$. Expansion very considerable; left shoulder slightly lowered; slight flattening in left infraclavicular, supramammary, inferior lateral and posterior regions; slight comparative dulness on percussion in these situations; slightly interrupted respiratory murmur in left infraclavicular region; respiratory murmur in other situations a little more feeble than on right side."

Such a favourable result as the physical signs show have taken place in this case—viz., adhesion of the opposing pleural surfaces—was hardly anticipated at one time, and could scarcely have been obtained so quickly from any other plan of treatment. It is laid down by many writers that in a young and previously healthy subject, when a first tapping has shown the presence of pus, and there is a tendency to reaccumulation, a permanent opening should be made without delay. When this is done the treatment is often protracted for many months. In the foregoing case the patient was approaching convalescence in less than a month, and hence the desirability of giving paracentesis a fair trial in similar cases.

In addition to the foregoing cases there are other conditions, in some of which I have seen paracentesis practised with advantage, and in which it has been practised by many physicians of high standing. It will be sufficient if I simply indicate these conditions, without referring more particularly to them.

In the passive effusion into the pleural cavity, which occurs sometimes in cases of heart disease or in post-scarlatinal dropsy, the operation is sometimes performed with great benefit. It is also recommended in cases of pleural hydatids, hæmothorax, hydropneumothorax, and as a palliative in cancerous pleurisy and empyema occurring in connection with phthisis pulmonalis. Bowditch recommends its use in pneumothorax, and a remarkably successful case of traumatic pneumothorax treated in this way occurred some time ago in the Cumberland Infirmary under the care of my colleague, Mr. Herbert Page. The patient was thrown from a cart, and from the in-driving of a fractured rib got pneumothorax with total collapse of right lung. The symptoms were urgent, and paracentesis by means of Dieulefoy's aspirator was performed four hours after the accident. A large quantity of air and some blood was withdrawn. Immediate improvement in the condition of the patient followed, and although three subsequent aspirations were rendered necessary, the patient ultimately got quite well.

Although there are many objections which have been urged against paracentesis of the chest, there are few which carry much weight. The fear of fatal syncope during the operation from the prop to the heart, which the accumulated fluid forms, being too suddenly withdrawn, or from hæmorrhage resulting from wounding of the viscera, is now quite unnecessary. With modern instruments the fluid can be withdrawn very gradually and with the aids to the physical examination of the chest which we now possess there must be absolute certainty of the exact position of the viscera before proceeding to operate, and any danger of wounding them is removed. In the cases which I have quoted the operation has been performed twenty-nine times, and in no case did any bad result follow. On one occasion there seemed to be a tendency to faint during the operation, and the proceedings had suddenly to be suspended. This, however, I think was clearly due to the extremely feeble condition of the patient. Fatal syncope is one of the usual forms of death in acute pleurisy, and is much more likely to arise from keeping the fluid in the chest than from letting it out. Of 820 cases collected by Evans, in only two did death follow the operation. Another objection which is commonly urged is the risk of the admission of air into the pleural cavity, and thus converting a serous into a purulent effusion. By the use of Bowditch's syringe or Dieulafoy's aspirator this accident need not occur except through carelessness, or from pure accident. In a great majority of cases in which it does occur it does no harm. Numbers of cases of pneumothorax do well, and if the accidental admission of air should occur, it need not cause much anxiety. What is of more importance, and deserves more attention, is the fact that in some cases albuminous expectoration quickly follows the operation, and may cause alarming symptoms and even death. When the amount expectorated is only small the symptoms are mild, but if it be excessive it leads to distressing dyspnœa, spasmodic cough, and death by asphyxia resulting from the accumulation of the fluid in the bronchial tubes. The symptoms come on in from ten minutes to an hour after the operation. Pinault first pointed out the occurrence of this albuminous expectoration after thoracentesis, and it has led to much discussion among French physicians. Among the causes which have been assigned for it may be mentioned perforation of the lung by the trocar, spontaneous perforation, and pulmonary congestion giving rise to transudation through the alveolar walls. Dr. George Johnson attributes it to absolute blood-stasis in the minute pulmonary vessels, especially in the pulmonary veins. It is impossible in the present state of our knowledge to decide which of these views is the correct one, and it is essential that further careful observations should be made on every case of the kind that occurs. A fatal case is reported by Dr. Ernest Legendre in a recent number of the *Gazette des Hopitaux.* About three litres of pink turbid fluid had been withdrawn by means of Dieulafoy's aspirator, and the patient experienced marked relief, but in a very short time the dyspnœa returned; there was a copious outpouring of the secretion into the air-passages; cyanosis, and death from asphyxia in about five minutes. Until the exact pathology of such like cases is more clearly understood, it will be impossible to guard against their occurrence, and in the meantime it will be sufficient to remember that alarming symptoms and even death may follow the operation, but as this is an extremely rare accident, it need be no bar to it in suitable cases.

A few words may be said in regard to the operation itself, and before doing so I would beg to express my obligations to my friend and colleague, Dr. Maclaren, for the able assistance he has rendered me in operating for me on most of the cases which I have recorded in this paper. The instruments used have been either the syringe and trocar of Wyman as used by Bowditch, or the pneumatic aspirator of Dieulafoy I prefer the latter instrument, and use the form figured in the accompanying drawing (Fig. 1). It would, however, conduce to the greater economy of time without interfering with the efficiency or success of the operation if the vacuum bottle (A) were of a larger size than the one generally supplied.

The precise place in the chest-wall at which the puncture is to be made has been the subject of much difference of opinion; and while some authorities recommend the fifth or sixth interspace, others say the space between the ninth and tenth ribs is the best. It is a good rule, when the effusion is limited to one side, not to tap anywhere unless it is absolutely and unmistakably dull on percussion, and an inch and a half or two inches higher than the lowest point at which the respiratory murmur is heard on the opposite side. I recommend the puncture to be made in a line let fall from the lower angle of the scapula. Previous to commencing the operation a careful examination of the chest should be made, and notes of the physical signs taken.

The vacuum bottle (A) should then be thoroughly exhausted by means of the syringe (D). Taking hold of the needle-trocar (E) in the right hand and pushing in the intercostal space at the place selected for the puncture with the top of the forefinger of

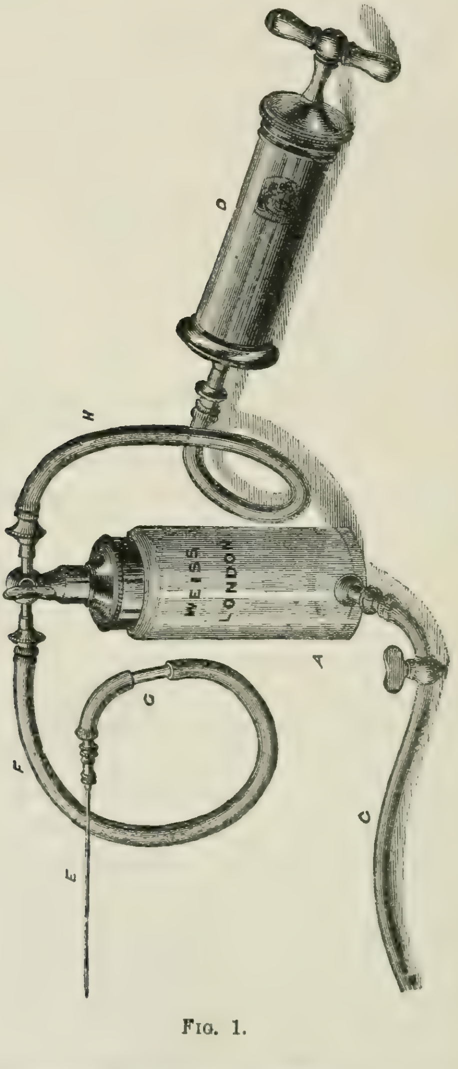

Fig. 1.

the left hand, the needle-trocar is plunged in at the depressed part slowly through the skin and superficial fascia, and then quickly so as to penetrate and not push forward any false membrane that may be adhering to the parietal pleura. As soon as the trocar is well through the chest-wall, the tap (B) is turned and the fluid will then be seen passing along the tube (G, F) into the bottle (A). If no fluid appears, the needle-trocar may be gently pushed forward; and if still unsuccessful it is better to take it out and introduce it afresh. When the bottle (A) is full, the tap (B) should first be turned, the tube (H) disconnected with the syringe, and the bottle emptied through the tube (C). As soon as this is done the bottle must be thoroughly exhausted before the tap (B) is again turned, and this process will have to be repeated several times before the chest is emptied of its fluid. When a sufficient quantity has been drawn off, the trocar is taken out, and no further dressing is necessary for the puncture than a piece of dry lint and plaster or lint soaked in collodion. Sometimes during the operation the patient suffers greatly from pain. This arises from the expansion of the lung and the entrance of air into bronchial tubes long unaccustomed to its presence. Towards the end of the operation it is not unusual for blood to flow, but this need give rise to no anxiety. It arises from rupture of some small vessels in the false membrane or on the inflamed pleura, and is readily absorbed. If the patient show any tendency to faintness, or if the pain and dyspnœa become very urgent, the operation should be at once suspended, otherwise as much fluid should be removed at each tapping as will flow, and the chest as thoroughly emptied as possible. The after-treatment which I consider most useful will be gathered from a perusal of the cases in the earlier part of the present paper.

In regard to the precise time for operating a few words may be said, and I think a simple rule may here be laid down. When the dyspnœa is urgent, or when the effusion does not seem to be diminishing under the influence of ordinary remedies, the sooner paracentesis is performed the better. More than 200 years ago Goulu pointed out that paracentesis of the chest in hydrothorax was safer and more frequently successful than paracentesis of the abdomen, and modern experience confirms that view. Neither age, sex, the existence of pregnancy, nor any other complication need be a bar to the operation; and if the effusion by its presence is causing distress to a patient already very ill, the indication is to operate without delay.

TREATMENT OF CALCULOUS DISEASE OF THE KIDNEYS.

BY W. F. M'NUTT, M.D., M.R.C.S., L.R.C.P. EDIN., ETC.,
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I WISH to make a few remarks on those able and interesting articles which recently appeared in the *Practitioner* on Calculous Disease of the Kidneys, by Dr. Basham, Westminster Hospital.

Circumstances have given me more than ordinary interest in the treatment of so-called "renal colic," aside from the fact that the treatment of a complaint so painful and exhausting to the patient should receive the most careful attention of every practitioner. Any plan of treatment that aims to cut short the patient's suffering, and to lessen the risk of impaction in renal colic, should command the interest of every physician. Such is the object of these remarks, and must be my apology for venturing to occupy valuable space in the *Practitioner*, and for presuming to criticise the treatment advised by the senior physician to Westminster Hospital.

During a partnership of over four years with a gentleman of this city (who is himself a man of remarkable professional instinct and ability), he passed hundreds of renal calculi. Most of them, it is true, were small, but a few were large, and their passage caused the most excruciating pain; one stone in particular, its passage from the kidney to the bladder having occupied ten days, caused the most fearful suffering and extreme exhaustion: in fact, our patient had for twenty-four hours all the symptoms of impending dissolution.

During these four years we read, and continue to read, everything procurable on the subject of "Calculous Disease of the Kidneys." I may say that this gentleman has tried various plans of treatment to prevent the formation of gravel, but with little or no success, as he is still manufacturing stones, having voided over seven hundred and fifty in one day a few weeks since. They had probably been several days accumulating in the bladder. The treatment employed by this gentleman in his own first few severe attacks, and also in those of other patients at that time, was exactly that recommended by Dr. Basham in the articles to which we referred. In fact, it was what all good authorities advised. We thought, like Dr. Basham, that "the most effective treatment is the hot bath, aided by anodynes. The combined effect of moist heat and opium relaxes the spasm of the duct, and relief is safely obtained. . . . It is very rare to witness a case in which the paroxysmal colic is not speedily relieved by opium and the hot bath. The temperature of the bath should be maintained at as high a degree as the patient can bear; the more profuse the perspiration induced, the more speedy will be the relief." (*Practitioner,* Jan. 1875, p. 30.)

I have no hesitation in saying that this treatment advised by authors is at variance with our experience, as well as opposed to common sense and sound reasoning. It implies that it is by relaxation of the ureter that the calculus passes. And here is the mistake; it is no such thing. The calculi are driven through the ureter by the accumulation of urine behind them. The urine furnishes the *vis a tergo* without which no possible relaxation of the ureter will allow a calculus of any considerable size to roll through it.

It is true that the very hot bath, the profuse perspiration, and the opium, relieve "the paroxysmal colic;" but if the impacted stone is large it is a dangerous relief—it is bought too dear. The opium benumbs the sensibility of the patient, the profuse perspiration checks the excretion of the urine, destroys for a time its *vis a tergo,* and the patient is lulled for the moment; and because the stone is not being forced onward. Thus is the patient subjected to the risks of ulceration from impaction, and perhaps death from exhaustion or perforation. As we have no means of measuring the size of the stone when called to treat a case of renal colic, our treatment should not be to prolong its passage. And this is exactly what we do with the hot bath and profuse perspiration, and what caused the calculus in my partner's case to be ten days passing. A few days since I was called to see a Mr. Barton, who was thought to be dying. I found him in bed in great agony, bathed in perspiration, intense pain in the side, shooting down the track of the ureter to the bladder and testicle, with severe pain in the head of the penis.

Immediately recognising that the *lapis infernalis* had started on its journey, I gave one grain of morphine subcutaneously; ordered him to get up and dress in his wrapper, and walk the floor. Had prepared for him a pitcher of flax-seed tea, with cream of tartar, ice cold, and ordered him to walk and drink and drink and walk, and to rub his side downwards along the line of the ureter, with orders to use a suppository—Morph. sulph. gr. ss., ext. hyoscy. gr. v. ol. theobrom. q. s.—every second hour while the pain continued. In two hours we had the gratification of seeing a good-sized stone. I made him walk because one can endure pain better while walking than when lying in bed, also to get the advantage of gravitation, and that the jar of walking might assist the descent of the stone; the flax-seed tea with cream of tartar ice cold, to cause diuresis and supply the *vis a tergo;* the morphia to enable him to endure the pain of the dilatation of the ureter, the pressure of the urine, and the passage of the stone. This I claim is the rational treatment for renal colic.

Reviews.

Croup in its Relations to Tracheotomy. By J. SOLIS COHEN, M.D.
Philadelphia: Lindsay and Blakiston, 1874. London: Trübner
and Co., Ludgate Hill.

THIS essay, which extends over seventy-eight closely-printed pages, was read before the Philadelphia County Medical Society, where it was so well received that Dr. Cohen was requested to publish it. We readily endorse this recognition of its merits; but it seems necessary at the outset to say a word or two as to the object which its author has had in view; for it can scarcely be gathered from the title which he has chosen. And, shortly, this has been in the first place to examine the value of tracheotomy in croup and diphtheria, and, secondly, to discuss the best method of performing the operation in children, and of meeting the various difficulties and complications that may arise during its performance or in the after course of the case. The subject is thus treated almost entirely from a surgical point of view, and the author has secured himself an open field by defining croup as "an exudative inflammation of the air-passages," including under this head both "sthenic croup, or croup proper, and systemic croup, or the croup of diphtheria." Dr. Cohen has expended much labour on the production of his brochure, and has added to his own views exhaustive references to the works of English and Continental authorities, and also a large collection of statistics of tracheotomy in the hands of those by whom it has been most often practised, so that the essay forms the most complete repository of information on the subject that we have yet seen. Twenty-six pages are devoted mainly to statistical tables, which bring out in a strong light the great diversity of results that have been obtained by different operators, but leave no room for doubt that, on the whole, the operation is the means of saving a large number of lives. There is a carefully written chapter on the indications for the operation, and another on the chief points of importance to be observed during its performance. Dr. Cohen wisely insists on the necessity for deliberation, and introduces the following extract from a speech by Professor Trousseau:—"A certain surgeon has reproached me with operating like a physician, and not like a surgeon. Well, he had an opportunity on one occasion of operating like a surgeon, and with one stroke of the knife he divided the œsophagus as well as the trachea. Some time afterwards he lost another patient by hæmorrhage during his brilliant operation. Since then Mr. —— has operated more like a physician, and after a while he will become a very fair tracheotomist." The lesson conveyed in this trenchant satire of the veteran French physician is one that we commend to all who have not had large experience in the performance of tracheotomy in children. Those who have will have learnt it for themselves. Much valuable clinical information will be found in the sections devoted to the after-treatment of the disease and of the surgical wound, and to the casualties which prevent recovery. Dr. Cohen concludes with a summary of the doctrines he has advocated, and these show how thoroughly he has performed his task.

The Pathological Anatomy of the Nervous Centres. By Edward Long Fox, M.D., &c. London: Smith, Elder and Co. 1874.

The object of this work, as the author states, is to present in a convenient form the valuable material in reference to nervous diseases which is to be found scattered in various publications at home and abroad, while at the same time he makes valuable contributions from his long experience in the Bristol Infirmary.

Dr. Fox shows himself well acquainted with the literature of his subject. He carefully analyzes it, and describes well and excellently illustrates the various morbid conditions to be found in the nerve centres. The first part of the work is devoted to the consideration of the abnormalities and diseased processes to be found in the nerve centres; the second deals with the pathology of special diseases. In the latter half Dr. Fox more particularly expresses his own views as to the physiological pathology of the symptoms manifested. Many of his observations are worthy of notice, but we think he too often manifests a tendency to satisfy himself with some vague condition of the blood or blood-vessels in order to account for the morbid manifestations.

Thus in speaking of delirium tremens, he thus seeks to account for the characteristic tremors:—"It must probably be from the malign influence of, or the negative fact of, mal-nutrition by the carbonaceous blood of the motor centres, either some of the external cerebral convolutions, or some large organs at the lower part of the brain, or the great cells of the grey matter of the spinal cord," p. 174. We think that such a loose method of writing is not much calculated to give precision to our knowledge of the subject.

Again, in seeking to account for the efficient cause of epilepsy he falls back on his humoralist theory, and attributes it to "a limitation of the blood supply to some portion of the encephalon, or to an abnormality in the blood itself, and of all abnormalities the most important is the diminution of oxygen," p. 324.

In reference to the pathology of tetanus, after considering the views advanced concerning it, he says: "I believe that in tetanus we must look for the connective lesion in the chemistry of the blood. In strychnia poisoning, a disease so closely analogous to tetanus, the presence of strychnia in the blood, or rather the effect strychnia has on the physiological condition of the blood, has been demonstrated as the cause of the spasmodic phenomena," p. 361. We think that if Dr. Fox had been acquainted with Lewisson's experiments on bloodless frogs he would not have considered the nature of strychnia poisoning so definitely demonstrated; for, as this experimenter has shown, frogs whose blood vessels have been emptied of blood and filled with salt solution, still exhibit all the characteristic phenomena of strychnia poisoning when it is introduced into their system.

We mention these as examples of the too great readiness with which our author satisfies himself with very questionable theories which serve rather to obscure than elucidate the subject.

The Surgeon's Pocket-book, being an Essay on the Best Treatment of the Wounded in War. By SURGEON-MAJOR J. H. PORTER, Assistant Professor of Military Surgery, Army Medical School, Netley.

THIS essay obtained the prize offered by Her Majesty the Empress of Germany in 1874, and is "specially adapted for the public medical services." One thing that certainly specially adapts it is its small size and convenient form, being really a book that can be carried in the pocket. Medical officers of the public services, but particularly of the army, are apt to be moved about so constantly that their libraries must of necessity be small and compact; and one of the disadvantages they suffer from is the difficulty, or in most cases, impossibility of obtaining the most recent and valuable medical knowledge in a concise form. Reynolds's *System of Medicine*, and Holmes's *Surgery* contain papers on different subjects of great interest and importance, but the bulk of the volumes makes it almost impossible for medical officers to carry them about, especially on foreign service, where the quantity of baggage is obliged to be very limited.

The first part is devoted to a consideration of the points to be attended to in the conveyance of men wounded in action. This will prove especially serviceable to young medical officers who enter on a campaign for the first time. Many hints are given which, in the hurry and bustle of an engagement, might not be thought of, but which might make all the difference to a wounded man, whether he was jolted along in agony or carried with the minimum amount of suffering. Instructions for utilizing rifles, sword-scabbards, great coats, tunics, belts, and even knapsacks are given; occasion for using which articles in this way never arises except on active service.

The best way of putting up fractures with limited appliances, and the principles of treating the different kind of gunshot and other wounds are dealt with. Then the wounds of different regions of the body—their various complications; injuries of joints, noting those adapted for resection and those in which amputation must be resorted to. Much knowledge on these matters has been gained by the last Franco-Prussian war. Hospital gangrene, osteo-myelitis, and other diseases which often occur among a mass of wounded men, are treated of; the best way of cooking in the field, of making temporary latrines, and of filtering water. A classification of wounds, and the formulary of prescriptions in general use in military hospitals conclude the work. It is just such a little work that has long been wanted, in which men placed in a novel position can find out quickly what is best to be done, and we strongly recommend it to every officer in the public medical services. The illustrations are numerous, and well executed; and its moderate price places it within the reach of all.

The Treatment of Skin Diseases. By R. Liveing, M.D. Third edition, 16mo. pp. 116. London: Longmans and Co.

This little book is, as it professes to be, devoted chiefly to treatment which is clearly described, and is brought up to the knowledge of the present day. It does not pretend to discuss fully debatable points in dermatology, but some interesting remarks will be found under the following heads—erythema, pityriasis, miliaria, psoriasis, and tinea decalvans.

The author points out that there are two varieties of lepra or psoriasis, the one occurring chiefly in scrofulous families, and generally appearing at an early age or about puberty; this form does not itch, and is especially relieved by cod liver oil, arsenic, and change of air. The other variety occurs commonly at a later period of life, and especially in gouty families: it is attended with itching, and is closely allied to the dry forms of eczema, from which it differs chiefly in the fact that there is no true exudation; and the disease attacks commonly the extensor side of the elbow and skin below the knee, which are the characteristic situations for psoriasis and not eczema. It is this form of psoriasis which is often cured by iodide of potassium and colchicum. The writer regards alopecia areata and tinea decalvans as identical diseases, and not in any way dependent upon vegetable parasites, and he fully explains how the error of inventing an imaginary disease (tinea decalvans) has arisen (p. 73). In the treatment of common ringworm he recommends Goa powder as a remedy of great value when thoroughly applied. He agrees with Dr. Hilton Fagge in regarding the pityriasis rubra of Hebra as a severe and rare form of dry eczema, or at all events as very closely related to that disease; and he recommends phosphorus as sometimes useful in its treatment. The book is especially adapted for the practitioner who, already versed in the diagnosis of skin diseases, desires a clear and concise description of their treatment.

On Alcohol. A Course of Six Cantor Lectures delivered before the Society of Arts. By B. W. Richardson, M.A., M.D., F.R.S. 8vo. pp. 122. London: Macmillan and Co.

In these lectures Dr. Richardson gives an excellent account of the physiological action of alcohol and substances allied to it, and describes the differences in the physiological action between alcohols belonging to the same homologous series. Although delivered to a popular audience, these lectures contain much instruction to medical men and even to those who have made the action of alcohol a special study. In regard to one point, however, Dr. Richardson's desire to impress the main points of his argument leads him to make a statement which if correct would be a serious argument against the use of alcohol in disease. —" Alcohol cannot by any ingenuity of excuse for it be classified amongst the foods of man. It neither supplies matter for construction nor heat. On the contrary it injures construction and reduces temperature." As Dr. Richardson has given an excellent account of Dr. Anstie's researches, and has also mentioned in the sentences which precede this quotation the probability that alcohol undergoes at first a partial oxidation, and then a further one, he evidently does not mean the statement that alcohol does not supply matter for heat to be absolute. It is well however, for the medical man to remember that alcohol in disease may have a double use, and that it not only retards the oxidation of the tissues, and thus tends to preserve them, but also may to some extent be itself oxidised instead of them, and thus act as a food. For the way in which it acts upon the temperature through the circulation we must refer our readers to these lectures, which will amply repay perusal.

Clinic of the Month.

Treatment of Chronic Dysentery.—Dr. Handfield Jones gives the details of two cases of chronic dysentery, in the first of which, occurring in a soldier, J. P., aged 24, who had been in India, red gum was ordered to be administered in the dose of 10 grains in a drachm of glycerine and an ounce of water, three times a day. The results were, apparently, most satisfactory, and the patient was sent out in a month, cured. Two months afterwards he was re-admitted with a relapse. The red gum was ordered again, and quite failed. Lead enemata and lead internally had no better effect. He continued to get worse. Ipecacuanha in doses of 5 grains combined with half a grain of opium produced slight improvement, but this only lasted for a time, and he died in about a fortnight. In the second case, J. K., the patient was 32 years of age, and had also been in India and Africa. The symptoms were well marked. He was ordered simple diet, rice pudding, beef jelly, and the same quantity of red gum and glycerine as in the previous case. No good results followed, though the quantity of red gum was increased to 15 grains for the dose. Turpentine stupes were applied, but after a fortnight, as the patient was no better, injections containing 6 grains of nitrate of silver, and 10 minims of the tincture of opium to 4 ounces of distilled water were ordered. No marked improvement followed, and 5 grains of ipecacuanha were given, and he became decidedly better. A month after his admission a drachm of the liquid extract of ergot was administered in an ounce of water three times a day. On the following day only two stools occurred, and on the next only one, and this continued till his discharge. In discussing these cases, Dr. Handfield Jones remarks that it is always satisfactory when we can comprehend the action of our remedies in a case of disease, especially when that disease is a representative one. Now, dysentery evidently represents, in great measure, the large family of catarrhs although there is also something specific about it, and it is prone to become a good deal more than a catarrh. Its chief peculiarity seems to lie in its tendency to affect the "substratum" of the mucous membrane, that layer of nuclei and granular matter underlying the basement membrane of the surface, to which the solitary glands belong, and to which special attention was drawn by Dr. Handfield Jones many years ago in the *London Medical Gazette*. This constituent of the mucous membrane is apt to become infiltrated with exudation, while the basement membrane and epithelium perish. The causes of dysentery seem to be such as impair or annul the special endowments of arteries and capillaries. Malaria, foul air, excessive heat alternating with chilling cold to the cutaneous surface, are all very capable of producing these effects. One great feature in the dysenteric state, indeed the principal in all but the earliest stages, is the loss of the proper action of the blood-vessels. The arteries are relaxed, or very prone to become so, and the capillaries leaky; and as long as this condition persists, the symptoms, even if they subside for a time, are reproduced by the least provocation. To amend this defect, astringents to restore retentive power to the capillaries, and tonics to promote contractility in the arteries, seem rational remedies. But for their success it is requisite that they shall be of such a kind, and given in such doses, that they do not become irritants. This is a very important limitation of their use, and for want of due regard to it an otherwise suitable therapy may quite fail. In one case, 4 grains of tannin, and opii. gr. ¼ quater die. aggravated the dysentery a good deal, but ʒss. of tincture of aspastic bark ter die, which contains tannin in some peculiar form, quickly cured it. Enemata of nitrate of silver are praised by Trousseau, but they made J. P. worse; so did turpentine stupes, which so often relieve a bronchial catarrh. The different success of red gum in the two cases is noteworthy. In J. K. it was markedly beneficial; the patient would in all probability have thoroughly recovered if he had been kept sufficiently long on the same treatment, and protected from the inclement weather, this too in spite of the existing abscess in the liver. At the time of his second admission he was too far gone to be rallied by any remedies. In J. P. red gum was useless, while ergot was speedily effectual. This seems to imply that the arterioles may be more at fault in some instances, and the capillaries in others. Dr. H. Jones is not aware whether ergot has been much used in the tropics, but it seems a hopeful remedy, and has been found successful by M. Luton, of Rheims (vide *Gaz. Hebdom.* Oct. 1871). He says, not only the hæmorrhagic element of dysentery, but the griping colic and fever, were at once relieved. He has tried ergot in some cases of inflammatory lung affection, but not with as much success as he expected. It is more decidedly useful in hæmorrhage. The good effect of the ipecacuanha during the exacerbation of the chronic disorder in the second case is well marked. This remedy should always be resorted to on such occasions. It acts, he believes, as a tissue sedative, and takes off that irritability of the bowel which makes it intolerant of astringents and tonics. (*Medical Times and Gazette,* June 19, 1875).

Bilateral Irritation of the Pneumogastric Nerves in Man.—An experiment, so nearly attended with serious consequences that it is scarcely likely to be repeated, was tried in April last, by Dr. Thanhoffer, of Budapest, and consisted in the simultaneous compression of both pneumogastric nerves, in a medical student named Ignacz von Kovaco. The young man, who was a willing martyr in the cause of science, had already undergone a number of experiments in which the vagus on the right side of the neck was compressed by himself at the inner edge of the sterno-mastoid muscle, and on a level with the external angle of the thyroid cartilage, by means of the nail of the incurved index-finger of the left hand. The result almost entirely confirmed the conclusion which Ludwig and others have drawn from their experiments on animals: namely, that irritation of the vagus diminishes the frequency of the pulse and prolongs the duration of each individual beat. Dr. Thanhoffer found, however, one point of difference, namely, that there was not, as had been observed in dogs, a marked diminution of the blood-pressure as indicated by the pulse tracing.

The bilateral compression of the vagi was made by Kovaco with the thumb and forefinger of the left hand; the forefinger being on the right and the thumb on the left nerve. The first few attempts were apparently unsuccessful, probably because both nerves were not exactly hit; but the last time Dr. Thanhoffer was startled by finding that his pupil returned no answer to his questions, but kept convulsively pressing his neck, whilst his eyes were starting and glassy. With great difficulty his hand was at last wrenched forcibly from his neck, with the fingers still bent as when compressing the nerves; and even then his consciousness did not immediately return, and it was not until he was lifted from his seat that he began to come gradually to himself, but it was some time before he could stand. He afterwards stated that his sensations at this time were as if his head were bound with iron rings, and as if there was an intense pressure on the whole surface of his body. Soon after the experiment he had a rigor, and began to be feverish, his tongue was furred, and his appetite gone, and he had a feeling of nausea during the rest of the day. Happily he was able to sleep well at night, and only suffered from severe headache the next morning. Since then he has been quite well. The pulse phenomena observed during the compression of the pneumogastrics were, as shown by a sphygmograph on Kovaco's right wrist, as follows: From the moment when pressure began, the line traced by the liver sank continuously for sixty-seven seconds, then rose again very slightly, and then stood quite still, in consequence of the arrest of the heart's movements. The pulse, which had beaten regularly eighty, a minute before the experiment, was seventy-four two hours afterwards, and continued so until one o'clock in the afternoon, the beats being irregular. Immediately after the experiment, Kovaco's pulse and heart's impulse were strong and the heart's sounds clear but soundless. (*Medical Times and Gazette,* July 10, 1875).

Bromide of Camphor.—A monograph on the physiological and therapeutical properties of bromide of camphor has recently been published by M. Pathault, of Paris. Experiments on animals have shown that it reduces the number and force of the pulsation of the heart, and causes narrowing of the calibre of small arteries by its action on the vaso-motor centres—conclusions somewhat at variance with one another, since, whilst it has an inhibitory effect upon the central organs, it acts as a stimulant to the sympathetic in the peripheral portions of the vascular system. It is also stated to have a lowering influence on the rate of respiration and on the temperature of the body, the reduction in the latter respect being rapid and very marked (as much as 3° centigrade in an hour). Dr. Pathault has found that the elimination of the bromide in the urine begins within six hours of the administration of the drug, and is not completed for two days. On the nervous centres it acts as a hypnotic, and also gives rise to choreic convulsions and muscular tremors. Dr. Pathault gives myographic tracings from frogs poisoned with the drug, and shows that they differ from those produced by strychnine (with which it has been commonly compared) in resembling almost entirely the physiological tracing. The drug has been given in doses varying from four to sixty grains with variable results in cases of delirium tremens, insomnia, chorea, infantile convulsion, hysteria, epilepsy, neuralgia, and in some affections of the genito-urinary organs. (*The Lancet,* Aug. 7,1875.)

Glycerine of Borate of Soda.—Cold medicinal glycerine dissolves its own weight of borate of soda, while 100 parts of distilled water dissolve only 8·3 parts, and 100 parts of hot water dissolve 50 parts, of which 41·67 parts are re-precipitated on cooling. To obtain the desired solution, M. Gaudolphe recommends that 100 parts of medicinal glycerine, and 100 parts of powdered borate of soda be triturated together in a glass mortar until the solution is complete. The solution of the borate of soda in the glycerine may be accelerated by placing the mixture in a stove or by introducing it into a flask, and submitting this to the action of the water-bath. In gargles the borate of soda is generally combined with honey or honey of roses, or even with syrup of mulberries—that is to say, with products which dissolve a very small quantity of this salt. It would, therefore, be advantageous to combine these with equal parts of glycerine and borate of soda. A definite and considerably more active solution is thus obtained, for glycerine mixes well with honey as well as with syrups. (*British Med. Journal*, Aug. 7, 1875.)

Extracts from British and Foreign Journals.

Treatment of Skin Disease in America.—Dr. Bulkley gives an analysis of 1,000 cases of skin disease treated in the Bellevue Hospital, half of whom were seen by himself. He notes the uncertainty of diagnosis, eczema, for example, including much that might be called by some impetigo and lichen. The order of frequency was:—eczema, 302; acne, 111; syphilodermata, 98; phtheiriasis, 57; psoriasis, 50; tinea, 48; urticaria, 42; scabies, 36; pruritus, 32; erythema, 25; herpes, 22; ulcera, 20; furunculi, 19; dermatitis, 14; pityriasis, 11. The remainder under ten cases each; more than one half of all the patients were females, the excess being 150. The number of children was small. The number of animal and vegetable parasites was very large—one-seventh of the whole number analysed. The proportion of eczema was, as usual in such statistics, one third of the whole, the excess being on the side of the females, in opposition to Wilson's tables. In regard to treatment Dr. Bulkley does not order poultices to remove the crusts of infantile eczema, preferring much to cause their separation by means of fatty matter. Amongst the poor he has the head soaked in cod-liver oil. Sweet almond oil answers also, the idea being to thoroughly protect the irritated mucous layer of the skin and to shield it from air and water. Occasionally the crusts will accumulate and adhere, and it becomes necessary to use a poultice or wash the head well with warm water and borax. He has also used largely, with good results, tannin in ointment (one drachm to the ounce). A very common treatment is to bathe first with the liquor picis alkalinus diluted ten or twelve times twice a day and apply the tannin ointment immediately afterwards. He has also used with very satisfactory results the subnitrate of bismuth in ointment, half-a-drachm to an ounce. Internal treatment is always required, such as cod-liver oil and the syrup of the iodide of iron. In adults in whom the legs are suffering from chronic eczema, elastic stockings should be insisted on. He has had success with tarry preparations. Many cases of ordinary eczema were treated with oxide of zinc ointment, and as dyspepsia was frequently present, rhubarb and soda mixture was very commonly used, to which he added a little Fowler's solution. In other instances Startin's mixture, containing the sulphates of magnesia and iron, aromatic sulphuric acid and gentian. In regard to *acne* the proportion of males to females was 42 to 69. In its treatment he has largely employed Gubler's plan of giving two or three teaspoonfuls of glycerine three times a day after meals. Citrate of iron and quinine may be given with it. Locally a lotion was applied containing one drachm of washed sulphur, four drachms of sulphuric ether, and three and a half ounces of alcohol. The *syphilodermata* were remarkably numerous—ten per cent. of all the cases. The treatment was by mercury and iodide of potassium. The common method of treatment of *phtheiriasis* of the head in the Bellevue Hospital is to soak the head well for twenty-four hours in kerosene oil, which destroys the animals and their eggs. For lice of the body a combination of caustic potash and ten drachms of carbolic acid in four ounces of water is used, diluting it once or twice at first. To make the cure of any of these forms permanent, the clothing must be either boiled or baked for a long time. *Scabies* in the older patients was treated with sulphur ointment, with the addition of a little carbonate of potash ; in the younger patients with more tender skins the liquid storax or balsam of Peru in ointment was used with equally good if not better results. For *psoriasis* the preparation of tar, *liquor picis alkalinus*, or Hebra's compound tincture of green soap and oil of cade were principally used with diluted mercurial ointments. In many of the more recent cases arsenic and alkalies were given, but no conclusions as to results could be drawn. Dr. Bulkley has obtained, however, very marked effects from the internal administration of tar and potash in the following form :—picis liquidi, ʒij., potassæ causticæ, ʒj., aquæ, ℥v., giving from 15 to 30 drops largely diluted on an empty stomach. The treatment of acute forms of *lichen* was soothing, of the chronic stimulating, with tar and mercurial ointments. The lichen scrophulosorum requires cod-liver oil. (*American Practitioner*, May 1875.)

Pathology and Treatment of Bronchial Catarrh.—The bronchial walls consist essentially of a fibrous membrane, a layer of smooth muscular fibres, and a mucous membrane. In the larger bronchi, cartilaginous laminæ are intercalated in the fibrous tissue, but these disappear in the smaller ones so that these, like the alveoli, are only kept distended by the elasticity of the interstitial connective tissue. The mucous membrane in the larger bronchi is of considerable thickness, with a thick fibrous layer, and its epithelium is ciliated and laminated. Towards the smaller bronchi it becomes thinner, and ultimately is only represented by the single layer of epithelium covering the vessels in the alveoli. The muscular layer subjacent to the mucous membrane, unlike the fibrous layer and the mucous membrane, becomes thicker towards the smaller bronchi, and forms a veritable sphincter at the commencement of the infundibula. The different characters presented by catarrhal affections of the larger and smaller bronchi are not, therefore, attributable merely to a difference in the size of the lumen, but rather to a difference in the structure of the wall of the air-passages. The disposition of the blood-vessels is also a matter of great importance in the pathology of bronchial diseases. These run with the lymphatics and nerves in the interstitial tissues, and take part in their diseases. From this point the vessels give out their branches to the bronchi and alveoli. But whilst the lobuli of the lungs obtain their supply of blood from the right heart, through the arteria pulmonalis, the capillary network of the bronchi is fed from the left heart through the bronchial arteries proceeding from the aorta and intercostals; the two systems, however, intercommunicate by means of the capillaries distributed on the bronchi. A certain respiratory activity is attributable to the bronchi through the branches which empty themselves into the pulmonary veins passing to the left heart. Hence, if the left heart fail to evacuate its contents owing to incompetence of the mitral valve, or if the course of the blood of the pulmonary vessels be interfered with by disease of the lungs, a stasis of blood takes place also in the capillary network of the bronchi; and if the aorta or its larger branches on the other side of the giving off of the bronchial artery be obstructed, the blood pressure in the bronchial artery rises, and a collateral flux of the bronchial mucous membrane is the consequence. All these conditions have a decided influence upon the pathology and therapeutics of bronchial catarrh; and it is to be observed that a clear distinction should be drawn between catarrh of the larger bronchi and that of the smaller ones, each of which present modifications in accordance with their acute or chronic course. Acute catarrh of the larger bronchi originates in cold, but may also be propagated by contagion. The contagious matter appears to be connected with the fluid secretion in the first stage, and is distributed in the expired air, especially during coughing. It seems to affect young people and infants most certainly, although the mode in which "catching cold" is effected has not been clearly made out. Rosenthal's observations paved the way for more accurate knowledge. If an animal be placed in a high temperature, dilatation of the cutaneous vessels follows, in consequence of which large quantities of blood stream out from the heart towards the cooler periphery, and a heat-regulating mechanism is in action, which keeps the animal temperature at about 100° F. If the surrounding temperature exceeds this to some extent, reaching 110°, death soon takes place; all the vessels become dilated, the respiratory movements hastened, the pupils dilated, the muscles relaxed, the pulse too frequent to be counted, and the temperature rises 15°—20° F. If the animal be now restored to the cooler temperature, its animal heat falls rapidly, and this not only to the normal amount, but considerably below it. This considerable fall of temperature, even in air of mean temperature, can only depend on paralytic dilatation of the cutaneous vessels, in which condition a much larger amount of blood than is normal flows from the heart towards the cooler periphery, and is returned to the centre of the circulation. Upon this cooling, after antecedent heating, depends a great part of the so-called "colds"—similar cooling down of the body by very sudden transition from a higher temperature to a lower one, so that the blood returning in a cooled state from the expanded cutaneous vessels quickly reduces the animal heat below the normal, often occurs in man, and in many cases without subsequent damage. Special conditions must be present for cold to be taken. One such has been mentioned above in Rosenthal's explanation—namely, paralytic dilatation of the cutaneous vessels. Many persons, even when exposed to a very high temperature, are not disposed to take cold; they are protected from such action. An additional moment is required, in order that the attack should be concentrated on some definite organ, and this additional moment is antecedent exertion and exhaustion of the organ affected. Thus acute rheumatism follows exposure to cold if there have been previous violent muscular exertion; pneumonia, if to the alternation of hot and cold external temperature and the vascular dilatation there have been great excitation of the respiratory activity in consequence of violent muscular effort in cold, highly oxygenated air, with constant renovation of the reserve air, and most easily of all a catarrh of the mucous membranes accessible to air, if they have been first excited to increased action in warm and especially in moist air, and have then been cooled down by constant renewal of cold air, in which case their capillaries are acted upon in the same way as those of the skin in the instance above given. Acute catarrh of the trachea and larger bronchi originates in this way. The other causes of bronchial catarrh, as dust, &c., are rather connected with the occurrence of chronic bronchitis. Pathological investigation of cases of acute catarrh of the larger bronchi exhibits hyperæmia and redness, swelling and softening, increased secretion from the mucous membrane and its glands. Although epithelial cells are found abundantly in the sputa, yet the membrane is found to have its epithelial layer intact—a proof that the cells are formed by a simple hyperplastic process. The pus cells, so abundant in the third stage, are chiefly leucocytes that have escaped from the blood, and have penetrated through the epithelial cells, but partly also they spring from the endogenous development of epithelial cells. No other changes are met with in acute bronchial catarrh. The symptomatology is equally simple—cough and expectoration and catarrh from the nasal, laryngeal and tracheal mucous membrane being the first symptoms, which are followed by a degree of fever proportionate to the extent of surface inflamed. Percussion gives unaltered resonance, and on auscultation only rhonchi are heard. In the treatment, the essential point should be to prevent the disease spreading to the smaller bronchi. In the first stage we should endeavour to effect derivation of the blood from the lungs by maintaining persistent dilatation of the cutaneous vessels, and this may be accomplished by heat and tartar emetic, to which opium may be added to relieve the cough and to prevent vomiting. By shortening the first stage, the second is regulated and alleviated. At a later period, solvents, which are uncertain in their action, and expectorants may be used, as ipecacuanha and morphia. Hot rooms should be avoided by those who are liable to the disease, and all means should be employed to strengthen the mucous membrane. (*Der Praktische Arzt,* 1875.)

Treatment of the Chronic Eczema of Children.—Dr. Caspari divides eczema into two varieties: the acute, in which a large part of the cutis, as for instance that of the face, reddens, becomes swollen and hard, and is covered with scales or a purulent secretion; and the chronic form. One form of the disease is found especially in scrofulous children. It consists of a distended and tuberculous condition of a part of the cutis, which is covered with loose frail scales, which latter are continually re-forming and leaving behind them fine cicatrices. The other variety is the ulcerative, which by preference is found over the joints and on the leg below the knee in persons of advanced age, and often leads to ulceration. He considers that all antiphlogistics and mercurials are contra-indicated in the treatment. Iodine and the iodides are also useless, except, perhaps, in scrofulous cases. Tonics, such as the chalybeates, in combination with laxatives like rhubarb, have a much better effect. Fats and spiced foods must be forbidden; the patient should have plenty of fresh air, and the most scrupulous cleanliness should be observed. Frequent bathing seems to afford excellent results. The writer does not think that there is any foundation for the belief of some that external applications should not be made for fear of "driving in" the eruption. The truth is that eczema does not leave the person until the general condition is bettered. As the most valuable external applications he recommends equal parts of unguentum citrinum and glycerine in chronic eczema of the head and face, especially in children of considerable age; zinc salves in the dry eczema on hairy places, and pure glycerine in eczema of the ear. He does not consider internal treatment of much value. Some persons (especially Dickson of London) have found local applications of concentrated tinctures of iodine and opium to the spine, of value. (*Deutsche Klinik*, 1875, and *Baltimore Physician and Surgeon*).

Hydatids in Australia.—In a paper which appeared in the number of the *Melbourne Medical Record* for March 6, and in the succeeding numbers, it is stated that in no country, with the exception of Iceland, is hydatid disease so frequently met with as in Australia. In 1861 but few cases had been met with in the hospital, but since then it has become one of the most common diseases of the colony. It was, however, not unfrequent long ago in the sheep stations of the country amongst the blacks, partly from eating raw or underdone mutton, and drinking unboiled water from water-holes frequented by sheep dogs and other animals. The writer, who does not give his name, states that he has seen them on the common watercress. In 100 cases of the disease the liver is affected seventy times and the lungs twelve. The upper and middle lobes of the lungs seem to be more liable than the lower lobes; but the lower lobes are very likely to become implicated when the hydatid is seated in the upper part of the liver, from the cyst penetrating the diaphragm, in which case it not unfrequently opens into a bronchial tube.

Bromoform as an Anæsthetic.—Bromoform in a pure state, as obtained by Rabuteau from the action of an alkali upon bromal, appears in the form of a clear, very heavy, and agreeably smelling fluid. Iodine dissolves in it, and colours it of a carmine red colour. The mode of action of bromoform resembles that of chloroform very closely. When administered in the form of vapour there is a period of excitement which is followed by deep sleep, in which there is complete anæsthetic relaxation of all the muscles and dilatation of the pupil. The awakening from the effects of the agent takes place tolerably rapidly, even when the inhalation has been continued for half an hour. Rabuteau hopes that it will come into use. (*Societé de Biologie Séance* du 10 Jan., 1875).

Carbazotate of Ammonia as a Substitute for Quinine.—Dr. I. Slane, of Goalpara, states that, his supply of quinine being nearly exhausted, and the indigenous antiperiodics failing, he was compelled to cast about him for a remedy with which to supplement his small stock of quinine. He determined to give the carbazotate of ammonia a trial, and proceeded to administer it to his fever cases. Up to the time of his writing (three months' experience of it) he had obtained very gratifying results. He finds it to be a very efficient remedy in the treatment of ague, and, whilst it is far cheaper than quinine, the dose is much smaller. The largest quantity he gave in *any* case was 8 grains in the twelve hours. The salt has no perceptible action in increasing the appetite, but singularly enough, like quinine, after a few doses it produces tinnitus aurium and slight deafness. The urine becomes tinged of a deep orange colour, which stains the clothes under its use, and the skin and conjunctiva may acquire a jaundiced hue, as occurred in two of his cases, but the discoloration soon passed off. He gave it in pill with extract of gentian; but it may also be given in solution, as it is perfectly soluble in water; and the liquor strychniæ may then be combined with it. Its intensely bitter taste is, however, an objection to its use in solution. Combined with a quarter of a grain of extract of nux vomica its efficacy seemed to be much increased. (*Indian Medical Gazette,* April 1, 1875).

Angioma and its Galvano-Caustic Treatment.—Alfred Battig strongly recommends the galvano-caustic method of treatment in angioma. He points out how slight is the general and local reaction as noticed by all operators, and this finds its explanation in the recent researches of Cohnheim on inflammation. For Cohnheim shows that on the application of an escharotic whatever may be its nature, there is always from the commencement a wide-spreading dilatation of the vessels with gradual degeneration, and that there then forms a central scab—a surrounding zone of stasis, an exaggerated diapedesis from stagnating capillary blood-flow, and an emigration from capillaries in which the blood is still flowing, and from dilated veins; whilst where the red-hot iron is applied there is vascular dilatation with subsequent gradual degeneration, a process that stands in no causal relation with the subsequent processes taking place in the vessels that may properly and specifically be called inflammatory. From an examination of the books and reports of the Breslau Hospital from 1870 to 1873, and of cases treated by Fischer and Maas privately, 47 in all, Battig found that 36 had been treated by the galvano-caustic method, 9 by excision, 1 with electrolysis, and 1 by acid. Most of the cases were seated in the head. One case, which was that of a cavernous tumour on the forehead of a girl of four years of age, which was treated with the galvano-caustic, terminated fatally on the third day after the operation, by meningitis. In 155 cases under the care of Middeldorpf, Fischer, and Maas, 137 were treated with the galvano-caustic, and only 1 terminated fatally. (*Centralblatt, f. d. Chirurgie*, No. 28, 1875.)

Ice in Diphtheria.—During an epidemic of diphtheria in the spring of the present year, Dr. G. Mayer of Aix-la-Chapelle treated 60 cases with the continuous use of ice-water. From most remedies recommended as specific, the author had previously seen little if any result. Of all internal remedies, chlorate of potash in large and frequently repeated doses appeared to be the most effective. He recommends, however, as by far the surest remedy, in a large majority of cases decidedly life-saving, the continuous use of ice internally, day and night. Of the 60 cases thus treated, only 1 died, a boy five-years old, the disease having extended to the larynx very soon after its commencement. Tracheotomy prolonged life four days without saving it; the operation, during this epidemic, when performed, being followed by good results in only a small percentage of the cases.

In the above cases small pieces of ice were placed in the mouth and allowed to melt, and this proceeding was repeated uninterruptedly day and night for the first two or three days, in the worst cases for a longer time; also as often as possible the patient was given ice-water to drink in greater or less amount. Even with infants eight or ten months old, it is easy to administer ice-water in teaspoonful doses; and the author saw, in the case of a child nine months old, where the mother repeated this every two minutes during the whole of the first night, on the second a decided diminution of the fever and restriction of the local symptoms. The drinking of ice-water has a more decided action than the swallowing of ice in cooling the pharynx. The children generally make great resistance to drinking so frequently, especially during the night, yet, by sufficient perseverance on the part of the attendant, it can be carried out regularly and continuously for the first two days. The drink can be made more palatable by the addition of sugar, or of raspberry or lemon syrup; in some cases also by adding red wine. The ice should be pure, and when such cannot be obtained, the vessel containing the water should be placed in a mixture of salt and ice, and thus lowered to the proper temperature. When there was much swelling of the glands of the neck, ice-bags were applied in the form of cravats, though the occasions requiring this were rare. It was not uncommon with the above treatment to see decided improvement in the local appearance on the second day, and in bad cases the fever did not last longer than from five to seven days; whereas, by other methods of treatment, especially with cauterisations, the course of the disease was often slow, dragging on for a long time. When improvement begins, generally after two or three days, the child may be allowed to rest at night, but ice should then be given whenever he wakes up. The great advantage of this treatment consists in its preventing the extension of the diphtheritic inflammation especially into the larynx, in the rapid spontaneous loosening of the already formed membrane, in the rapid diminution of fever, and in the prevention of blood poisoning. Cauterisations are condemned as increasing the inflammatory swelling of the mucous membrane, endangering extension into the larynx, and, by opening blood-vessels, favouring blood-poisoning. The author does not claim that this treatment is original with him, but thinks that hitherto its advantages have not been sufficiently emphasised and proclaimed. (*Jahrb. f. Kinderheilkunde, Jahrg.* vii., *Heft,* iv.; and *Baltimore Physician and Surgeon,* Vol. iv., No. 3).

Bromide of Iron in Chorea.—Professor Da Costa, in a recent clinical lecture on this subject (*Medical and Surgical Reporter*) says : " Having now used it for three or four years, my experience, from the treatment of a large number of cases, giving abundant opportunity to witness its good effects, induces me to like it better than any other one article in the treatment of chorea. It should be given in increasing doses, never commencing with less than five grains for a child, and rapidly increasing the dose to twenty. It may be given in plain syrup and water, in the form of a pill, or better, in an effervescing powder. It not only affects the chorea, but also impresses the nervous system as a sedative, quieting it, and giving the patient rest. It is also a valuable agent in treating the incontinence of urine in children. It was in a case of this kind, complicating chorea, that I first observed its value ; being surprised and pleased to see that, as the symptom which led to its administration improved, the chorea also diminished and soon disappeared. Since then I have used it almost continuously. Local chorea, or clonic muscular spasm, such as twitching the eyelids, &c., in hysterical women, are sometimes cured by this drug after the failure of other remedies. In answer to the question whether it is the bromide or the iron that benefits, I think it is the combination ; that neither *alone* accomplishes the result ; for you will find it benefit cases that have previously taken iron without improvement ; and as regards the other bromides, we certainly cannot claim for them any especial value in chorea, as they frequently disappoint us. The remedy occasionally fails, as all remedies sometimes do in this obstinate affection, but it certainly is one of the most valuable agents we possess for the treatment of chorea."

The Therapeutics of Ergot.—The committee on therapeutics of the Chicago Society of Physicians and Surgeons, reports as follows respecting aqueous and alcoholic solutions of ergot:—These two differ in their effects upon the circulatory apparatus. The aqueous solution excites the activity of the cardiac inhibitory centres, and the vaso-motor centre in the medulla; it slackens the pulse, narrows the calibre of the small arteries; and increases the blood-pressure. Very large doses paralyze the heart at once, and so effectually that the induced galvanic current fails to restore it. These effects on the heart and vessels are not at all produced by the alcoholic solution. The latter produces symptoms akin to those of acro-narcotic poisoning, viz.: irritation of the mucous membrane of the stomach and bowels, tonic cramps, and agitative violent spasms—symptoms which cannot be produced by aqueous solutions of ergot. (*New Remedies.*)

Hypodermic Effects of Atropia and Morphia.—The following conclusions arrived at by Drs. Mitchell, Keene, and Morehouse, of Philadelphia, appear to be well established:

1. Conia, atropia, and daturia have no power to lessen pain when used hypodermically. 2. Morphia thus used, is of the utmost value to relieve pain, and is more potent in certain forms of neuralgia, the nearer it is applied to the seat of the suffering. 3. Morphia lowers the pulse slightly, or not at all. Atropia usually lowers the pulse a few beats within ten minutes, and then raises it twenty to fifty beats within an hour. The pulse finally falls about the tenth hour below the normal number, and regains its healthy rate within twenty-four hours. 4. Morphia has no power to prevent atropia from thus influencing the pulse; so that, as regards the circulation, they do not counteract one another. 5. During the change of the pulse under atropia, the number of respirations is hardly altered at all. 6. As regards the eye, the two agents in question are mutually antagonistic; but atropia continues to act for a much longer time than morphia. 7. The cerebral symptoms caused by either drug are to a great extent capable of being overcome by the other, but owing to the different rates at which they move to affect the system, it is not easy to obtain a perfect balance of effects: and this was made the more difficult from the fact already mentioned, that atropia has the greater duration of toxic activity. 8. The dry mouth of atropia is not made less by the coincident or precedent use of morphia. Atropia does not constipate, and may even relax the bowels; morphia has a reverse tendency. 9. The nausea of morphia is not antagonised or prevented by atropia. 10. Both agents cause dysuria in certain cases, nor is the dysuria occasioned by the one agent relieved by the other. Atropia has no

ability to alter or lessen the energy with which morphia acts to diminish sensibility or relieve the pain of neuralgic disease. 11. As regards toxic effects on the cerebral organs, the two agents are mutually antidotal; but this antagonism does not prevail throughout the whole range of their influence, so that in some respects they do not counteract one another; whilst, as regards one organ—the bladder—both seem to affect it in a similar way. (*Pacific Medical and Surgical Journal and New Remedies.*)

Ailanthus Glandulosa in Dysentery.—Dr. Cobert, medical chief of the British Navy in China, extols the bark of the root of this tree as superior to ipecacuanha, or any other drug, in the treatment of dysentery. It is intensely bitter, like quinia, and produces vomiting when freely used. Dr. Robert found the dried bark of the root as good as the recent. The Chinese physicians who employ it give a cup of the strong infusion twice a day. The tree grows luxuriantly in all parts of the United States, having been introduced for the purpose of shade. It is a very rapid grower, and propagates itself abundantly by shoots from the root, being almost a nuisance in this respect. The tree is quite common in California, and is known as the Ailanthus, or Pride of China. Some further account of its remedial application may be found in the *American Journal of Pharmacy* for June, 1874. (*Pacific Med. Journ. and New Remedies.*)

Treatment of Catarrhal Jaundice by Electricity.—Dr. Gerhardt, of Berlin, first determines the position of the gall-bladder by percussion at the free border of the liver. This can often be detected by a small rounded prominence at the inferior convexity of the liver, and can easily be made to project. The electrode of a strong inductive electric machine is applied at this point, while the other electrode is applied at the other side of the median abdominal line. Almost always, when the current is powerful, a gurgling sound can be heard, and very often the fæces resume their natural colour, and the cure is effected. (*Ber. Klin. Wochenschr and New Remedies.*)

Nitrous Oxide in Tubercolosis.—Dr. C. W. Larison (*Cinn. Med. News*, November, 1874) reports a case of miliary tuberculosis, in which, after the failure of all ordinary remedies, nitrous oxide was used with most desirable results. Improvement was very slight at first, but steadily increased until complete recovery resulted. Cutaneous circulation assumed its vigour, muscles performed their functions with greater precision, the pulse became stronger and less frequent, appetite became voracious, weight increased, &c. The amount of gas taken was about five gallons a day at intervals. (*New Remedies.*)

Strychnia Eating.—Dr. Morey, in the *Pacific Medical Journal*, gives the following remarkable account of a strychnia-eater in his town:—"I first became acquainted with this man in the fall of 1861, and soon learned of his habit of eating strychnia, after a long and continued debauch, and in a condition bordering on delirium tremens. The first time my attention was particularly called to it, he wished me to give him a bottle of strychnia, which I did at night about bed-time. He took the bottle, poured the strychnia into his hand, and threw it into his mouth as carelessly as though it were salt; and, in the course of half an hour, not feeling the effects from it that he wished, he repeated it, and continued to do so until he became perfectly sober. The quantity required would correspond to the length of time he had been drinking, and the quantity of whisky he had drunk. I was struck with the wonderful effect it had to so completely sober him, and leave his system so entirely free of any nervous disturbance and without the reddened and bloated appearance of the face, the dull heavy eyes, and irritable stomach of the drunkard. After a drinking bout of two weeks' duration, with all the appearance of approaching delirium tremens, he got up in the morning with his mind clear, his eyes bright, his skin clear and fair, and with all the appearances of a man in perfect health and vigour, and ate as hearty a breakfast as usual, and went to his work as though he had never taken a drop of whisky in his life. My curiosity being excited at what seemed so unaccountable an occurrence, I began questioning him as to when he commenced its use, and what induced him to take it, but found him very reticent, and have not to this day ascertained the causes that first led him to its use. All he will tell is that he commenced its use in 1856. From 1861 to 1867 I saw him very frequently, and almost as often have seen him take the strychnia, until it ceased to be a curiosity, except to study its physiological action. In every instance when he took it, every appearance of dissipation would disappear in a very short time. Whether strychnia is an antidote to alcoholic poison, and *vice versa*, was a study for which I could find no authority to guide my conclusions." (*New Remedies.*)

Arsenic as Antidotal to Acute Alcoholism.—Henry M. Fiske, M.D., of San Francisco, writes:—"In the April number of the *Pacific Med. and Surg. Journ.*, I find an article by Dr. Morey on the antidotal powers of strychnia in cases of alcoholic poisoning. It called to my mind a case in which arsenic seemed to possess the same power—the case of Dr. C.—a fellow-student of mine, whom I had known intimately since the year 1840. He became addicted to the excessive use of alcoholic drinks. He was an able physician, and had, both in Michigan and in this State, an extensive practice, and was well known to many physicians, whose testimony can be had, if needed, to corroborate my statements. He would have an extended spree, varying from one to three weeks in duration. When he wished to sober up at the end, or if, during the paroxysm, he desired for any purpose to be himself again, he would commence and drink half an ounce of Fowler's solution, repeating the dose in one hour, if necessary, and continuing the same dose at the same or shorter intervals, till sometimes he had swallowed the enormous quantity of five or six ounces. He would then be apparently as fresh and vigorous as though he had never been intoxicated, from two to five hours being all the time generally necessary to bring him to his normal condition. Often have I been sent for to consult with him and found him unfit for business, when he would retire to a room, call for or take from his saddle-bags his "Fowler," as he called it, and in two or three hours he would be ready for business. As already hinted, many who read this article will remember him, an honourable, intelligent physician, a noble man in every sense of the word, but who acquired the unfortunate habit of using alcoholic stimulants to excess. He finally died of phthisis, and lies buried near one of our flourishing mining villages." (*New Remedies.*)

Cholera, How to Prevent and Resist it.—Prof. Max v. Pettenkofer propounds a theory, the essential feature of which consists in the prominence given to certain *local* conditions as favouring the development and spread of cholera. Two elements which he speaks of as the "ground air," and the "ground water" of a locality, hold, according to this theory, the highest significance. For a certain distance beneath the surface the soil is porous and permeated in its pores by air or gases of various kinds (noxious or unnoxious, as the case may be). The amount of this ground air is such as to form more than one-third of the space, which even the most compact gravel occupies; this ground air will diffuse through the soil, will rise into the superjacent atmosphere, or take other various directions of current in accordance with ordinary physical laws, and this will, to some extent determine the health of a district. The active and uninterrupted communication which exists between the air within and around our houses, and that contained in the ground beneath them, is a fact, the investigation and establishment of which constitutes a highly important result of Pettenkofer's labours, and shows in how many other and more subtle ways than those more commonly acknowledged ashpits, cesspools, &c., may act in contaminating the health of a district. Moreover, this surface soil is everywhere more or less damp, and as we dig downwards in most places we arrive at a stratum which is saturated; this saturated stratum eventually lying upon one that is impervious to water. The rise and fall of this ground water is then, according to Pettenkofer, another important element in determining the hygienic condition of a locality. The water lying in this saturated stratum is termed the ground water. The observations of Pettenkofer in Munich, extending over sixteen years, show that increased mortality invariably accompanies a low state of the ground water. The explanation of this may be given as follows: Let us suppose that just before the outbreak of an epidemic of cholera in a town, some very minute seeds have been imported and dropped into the ground which had been rendered favourable for their growth by the sinking of the ground water, as noticed in the wells. After remaining for some time in the damp soil, the seeds become ripe and acquire a poisonous character, and rising with the ground air float about in the atmosphere. Here they come into contact with the inhabitants, and effect an entry into the bodies of many with the air they breathe, in food or otherwise. A certain number of these take cholera, and within their bodies the seeds undergo a further development, and their numbers become enormously multiplied. These are expelled with the dejections in an immature state, or at all events, not in a state to produce epidemic cholera, until after they have lain in a suitable soil for some time. A sufficient quantity of full ripe seed might be transported from one town to another with dirty linen, &c., to infect one or two persons directly, but not enough to produce an epidemic. The persons thus infected would be poisoned by the seeds bodily conveyed from the cholera district, and to all intents and purposes they might be regarded as having been placed in the same circumstances as those who were living in the infected place. Now the cases thus occurring through contact with the imported seeds will result in an epidemic if the local and temporal conditions be favourable; otherwise the place will escape in spite of the importation. The hygienic rules to be observed, if these views be correct, are sufficiently obvious, and one of the most important is that every possible precaution should be taken *before* the outbreak of an epidemic. All arrangements, for example, which relate to the protection of the soil from contamination, or its better drainage, will be perfectly useless if they are only commenced at the time of the outbreak of an epidemic, for it requires much time and care before an impure impregnated soil can be rendered uncontaminated. (*Irish Hospital Gazette,* May 15, 1875.)

Treatment of Functional Headache.—For the headaches which depend on anæmia of the brain, usually resulting from nervous exhaustion, and following mental work or physical fatigue, Dr. McLane Hamilton gives tea or cocoa at the time, and recommends the following prescription:—

℞ Strychniæ sulph. gr. i.;
Acidi phosph. dil.;
Tr. Ferri. chlor. aa ʒvi.;
Aquæ camphoræ ad. ℥iv.

Sig.—A tea-spoonful after eating.

Aromatic spirits of ammonia and sherry may be given several times a day with good effect. Muriate of ammonia is an invaluable remedy in these headaches, particularly in hemicrania. It should be given in very large doses—from ten grains to thirty—every hour until relief is obtained.

The *hyperæsthetic* headache demands opposite treatment, and is aggravated by stimulants. These are the cases where there are redness of the face, tense carotids, injected conjunctivæ, heat of skin, restlessness and confusion of the mental faculties. During the paroxysms the hands and feet are generally cold, and the patients suffer from sleeplessness. For these he believes bromide of sodium to be the most efficacious remedy, and next to it the bromide of calcium. He recommends:

℞ Sodii bromidi, ℥i.;
Fld. ext. ergotæ, ʒi. p.;
Aquæ camphoræ, ad. ℥iv.

Sig.—A tea-spoonful every three hours, or two tea-spoonfuls at night.

In these headaches, cardiac sedatives, such as aconite and veratrum viride, are of great service, and the continued use of digitalis combined with zinc is beneficial. For the headaches of inebriety he uses the monobromide of camphor, and sometimes applies leeches or cups. A common class of headache are those depending on reflex causes, and may be called the inhibitory headaches. They are often associated with indigestion or disturbance of the uterine functions, but there are some points of irritation which may readily be overlooked, such as hæmorrhoids, which often cause headache associated with great restlessness and fatigue. Its seat is usually in the frontal region, and it comes on very suddenly. The conditions occasioning these headaches are to be met by special interference and proper remedies.

In rheumatic headache the pain is superficial, and there is a diffused hyperæsthesia over the scalp which is very sensitive to touch. This is generally amenable in a few minutes to the faradaic current applied by a wire brush. In the headaches which are almost invariably associated with syphilis the inunction of mercurial ointment is often useful. The suboccipital headache of malaria is often uncontrolled by quinine alone. The combination of arsenious acid is of great use, and the addition of a small quantity of belladonna increases its effects still more.

In neuralgia he finds the following prescription serviceable :

℞ Morph. sulph., gr. vi. ;
Ext. belladonnæ ;
Ext. nucis vomicæ, āā gr. xii.
Ferri et quiniæ citrat. ʒii. p.

Ft. massa et divid. in pil. No. xlviii.

One three times a day.

Strychnia is of great benefit in the anæmic variety of neuralgia. Peripheral neuralgia is treated most successfully by local applications such as galvanism, chloroform, blisters, and the actual cautery. The inhalation of a few drops of nitrite of amyl often stops a severe neuralgia. Morphia injected subcutaneously is one of the best remedies ; and it is perhaps even more efficacious when combined with atropine than when employed alone. Freezing the skin just in front of the ear, by ether spray, will cut short a violent attack of facial neuralgia in a few moments. In employing galvanism, the poles should be held over the nucha or lower down, and over the mastoid bone or upon both temples. In neuralgia the positive pole may be held just at the back of the ear, and the negative passed over the several branches of the fifth nerve. The faradaic current often relieves many headaches, particularly if they are diffused over the scalp, and if they are aggravated by heat to the head or pressure. Cold applications, such as bladders of ice, or the cold douche, are especially useful in headaches belonging to the hyperæsthetic variety. (*Philadelphia Med. Times,* v. p. 289).

Novel Treatment of Sciatica.—Dr. J. Pretz (*Weiner Medicinische Presse*) gives as his personal experience the following facts. Having an attack of sciatica for six months, he tried all the ordinary remedies with no avail. Observing that his attacks were slighter after eating, he determined to eat as often as the pain recurred. This was often twelve times in twenty-four hours. He constantly improved under this treatment, and in about two months entirely recovered. Two other cases were afterwards treated with similar results. He accounts for the result by the development of heat from the food and drink. (*Philadelphia Med. Times,* v. p. 226).

Treatment of Severe Asthma.—In this disease the injection of five grains of chloral, subcutaneously, in twenty minims of water, is recommended in the *Philadelphia Med. Times,* v. p. 299.

Notes and Queries.

Cod-Liver Oil Emulsion.—This emulsion is of a white colour, of about the consistency of thin honey. It contains half its bulk of cod-liver oil so intimately mixed with some vehicle that it does not separate even after standing for weeks, and agreeably flavoured so as partially to cover the taste of the cod-liver oil. Besides this, Messrs. Richardson, of Leicester, who prepare this emulsion, have also made two others, one of which—the cod-liver oil emulsion with quinine—contains half a grain of quinine; and the other, phosphorized cod-liver oil emulsion, contains $\frac{1}{50}$ of a grain of phosphorus in each ounce of the emulsion. All of these may prove palatable to patients who dislike the plain cod-liver oil.

Pepsin-Essenz.—This is a preparation of pepsine made according to a formula given by Professor Liebreich. It closely resembles the pepsine wine ordinarily used in this country. It does not dissolve meat nearly so readily as the pepsina porci of the British Pharmacopœia, though its digestive power in this respect is quite as great as that of pepsine wine. It is, therefore, not so suitable for adults as the pharmacopœial preparation, but it possesses to a considerable degree the power of coagulating milk, and it may therefore be advantageous in the dyspepsia of infants. The agents for this county are Messrs. Corbyn, Stacey, & Co.

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⁂ Any of the foreign works may be procured on application to Messrs. Dulau, of Soho Square, W.C.;—Williams and Norgate, of Henrietta Street, Covent Garden, W.C.;—or Baillière, of King William Street, Charing Cross.

Department of Public Health.

SANITARY WORK IN INDIA.

If the sanitary work done in India had any reasonable proportion to the vast quantity of official publications issued annually on the subject, that great dependency might well be congratulated. But for the annual synoptical account of this literature, which since 1867 has been published by the Secretary of State for India, much would be wholly unknown in England; and even with the assistance of this account (itself now a formidable volume) it is difficult, short of the devotion of a lifetime, to obtain a competent acquaintance with the various reports from which it is chiefly formed. It is not surprising that rumours have been lately afloat that the India Office and Indian Government have become aghast with the overwhelming and increasing bulk of the sanitary literature for which they are responsible, and which by reason of its very bulk threatens to become useless, whether for practical or for scientific purposes. Measures are now being contemplated, it is believed, for bringing the system of sanitary reporting in India into some more comprehensive form, by which while the redundancies which disfigure it are got rid of, its practical and scientific value may be brought more within the capacity of beings whose days are measured by ordinary seconds, minutes, and hours. What part in effecting the proposed change is to be played by the India Office, what part by the Indian Government, we have no means of knowing, but certain changes recently made in the sanitary administration of the India Office are not, if left unexplained, of a nature to beget confidence that the evil is about to be dealt with in a way altogether to be desired. The *Sanitary Department* which formerly existed at the India Office, has recently been merged in a new department designated of *Statistics* and *Commerce,* and the term *Sanitary* has been abolished in the administrative business of the Office. To English readers this appears like the relegation of sanitary work to a very subordinate position in the Indian administration; and it is difficult to understand other than that it must exercise, as indeed it implies the operation of, an unfortunate influence upon Imperial and Local sanitary administration in India. It suggests, moreover, that the rumours of some modifications being designed in the manner of Indian sanitary reporting may simply express the natural utter weariness and bewilderment arising from the annual avalanche of printed reports which is poured into the India office, and the determination to get rid of the good by some simple process of excision rather than by placing the vicious system, of which the reports are the indication, upon a sounder basis.

Indian sanitary reporting is certainly the most marvellous phenomenon of sanitary administration in these days. It appears to have been undesignedly founded upon an ingenious inversion of a well-known rhyming jingle, and its principle may be thus expressed:—

> "Little fleas have great fleas upon their backs to bite 'em,
> And great fleas have greater fleas, and so *ad infinitum.*"

First we have the reports of the local sanitary commissioners of the several Presidencies; then we have the reports of the General Sanitary Commissioners upon these reports; next we have the reports or minutes upon these several reports of the Secretaries or other principal administrative officers of Governments; and finally we have the reports upon all these reports of the Army Sanitary Commission, to which Commission all the sanitary reports for India appear to be submitted indiscriminately by the India Office. The several commentators or sets of commentators do their work of criticism with the most charming freedom, and the profoundest and most complex questions of etiology are dealt with after the same fashion as the simplest questions of drainage, leaving the effete procedure common to the temperate zone in such matters hopelessly in the rear.

We are so unfamiliar with the mysteries of Indian administration that we are not prepared to say that this is not the proper kind of sanitary reporting for that Empire; but it certainly conveys here a notion of the painful crudity of the conceptions which must be entertained at the India Office of the relations of the local to the central sanitary administrations, both of the Presidencies and of the Imperial Government. There is a want of just conception of the respective positions of the scientific etiological, of the statistical, and of the practical elements of sanitary administration which to home-bred notions is simply amazing, and which must be a source of constant vexation to the responsible administrators of the Indian Government, and must ultimately exercise a most disadvantageous effect upon Indian sanitary work. The administrators must be in a continual whirl of discussion and buffeting amidst diverging advisers, each successive adviser complicating the advice of his predecessor. No certain distinction being made between the determined results of sanitary experience and the debated questions of etiological research, confusion is the result, which cannot fail, so long as it continues, to have a most unfortunate effect upon sanitary science and practice. An illustration of such confusion, and of the peculiarities of Indian sanitary reporting to which we have referred, is given in the last synoptical report of the India Office.[1]

Prominence is chiefly given in this report to Dr. Cuningham's report on Cholera in Northern India to 1872 (contained in his 9th Annual Report). So important is this deemed that, in addition to a very full abstract of the report, the notes of the inquiries upon which it is founded are given in detail. As our readers have already some acquaintance with this work, it will simplify our present object to follow the lead of the synoptical account. First, in the body of the account, attention is drawn to the fact that the Army Sanitary Commission " express their sense of the important service which Dr. Cuningham has rendered to the history of Indian cholera by the report ;" and that they consider it " of great value, for this reason amongst others, that it has brought certain important questions regarding cholera to an issue. The appeal now made " (they say) " sets aside all opinions and theories, and requires to be answered solely on the facts." In the appendix to the account is given the detailed memorandum of the commission—a memorandum which we should advise such of our readers as indulge in cholera literature to bind up with the report to which it refers.

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[1] " Report on Measures adopted for Sanitary Improvements in India, from June 1873 to June 1874 ; together with Abstracts of Sanitary Reports for 1872, forwarded from Bengal, Madras, and Bombay." (*Printed by Order of the Secretary of State for India in Council*, 1874.)

The Commission first discuss at some length the distribution of cholera in Northern India in 1872 with reference to the distribution in 1871. We limit ourselves here to the simple question of distribution in reference to Dr. Cuningham's conclusions. The Commission shows that cholera in 1871 (they write "the cholera of 1871," as if the disease were an entity) was present in nearly all the more important districts throughout India from January onwards. "If," say they, "the places at which cholera deaths were registered in 1871 and 1872 be compared, it will be found that the law of distribution of the disease, as distinct from the law of intensity, was essentially the same in both years." They further say :—"The cholera of 1872 passed over in certain parts of India from the cholera of 1871 ; and that cholera simply as such did not appear to spread from any centre ; it was, on the contrary, present over portions of the whole epidemic region in the first month of the year ; and that in the majority of districts it continued more or less throughout the year." The important bearing of these statements upon Dr. Cuningham's conclusions as to the influence of human intercourse on the dissemination of the disease in 1872 will be obvious. He considers this question in two principal lights: first, with reference to the relationship of outbreaks to preceding prevalence of the disease in adjoining districts, and next to the influence of railway travelling on its diffusion. Generally, he deals with the epidemic of 1872 as a dissemination from the endemic area of cholera in the Lower Provinces. According to the Army Sanitary Commission, whatever dissemination from the endemic area may have occurred, this must have taken place in 1871, and not in 1872 ; and consequently the conditions for solving the particular problems which Dr. Cuningham set himself to solve as to the influence of human intercourse in disseminating cholera did not exist. The epidemic of 1872 arose in districts previously occupied by cholera, and required to be studied with reference to this cardinal fact. Dr. Cuningham has not done this.

Again, the Army Sanitary Commission show that "the cholera of 1872 afforded statistical proof of the old observation, that cholera attacks the native population before it attacks the troops ;" and they add the important observation, "the practical bearing of facts of this class regarding the movement of troops is very important, for if the experience of 1872 is found to be the rule, it would appear that the real time for action is when the civil population is attacked, and that, when troops are actually suffering, the evil is done." Now, it is just at this point of the relationship of the appearance of cholera among the troops subsequent to its appearance among the native population amidst which they live, where Dr. Cuningham leaves us, in respect to transmission of the disease by human intercourse, most hopelessly in the dark. He shows, when speaking of quarantine, that the relationship between the troops and the native populations is necessarily such that sanitary cordons applied to cantonments must be impracticable in practice and utterly fallacious as a means of protection against contagious disease; but he fails to observe that these conditions are fatal to a precise study of the question of transmission of the disease. It would be more easy to study the phenomena of dissemination of scarlet fever or measles in a big town, than to study the precise modes of transmission of cholera under such circumstances. Here also, as in respect to the general dissemination of cholera in Northern India in 1872, the necessary conditions for studying the question Dr. Cuningham set himself to solve, did not exist, and his conclusions as well as the inquiries on which they were based were as a consequence fallacious.

The Army Sanitary Commision fail to appreciate the extreme importance of the facts they discuss upon Dr. Cuningham's conclusions; but they none the less deserve gratitude for eliciting them so fully. Coming to the question "how cholera got to the stations," the Commission clinch the facts already referred to, observing :—

"Is there proof that can be turned to practical use that it was imported, or must we look to more general and local causes for its prevalence? The following facts on this subject, given in the notes, are merely an instalment of what it is desirable to learn, and must be taken as such :—

"(1) As already stated, in all the districts where the stations are situated the cholera of 1872, among the native population, passed over from the cholera of 1871, and the disease *was commiting ravages for months among the native population before it attacked the troops.* [The italics are ours.]

"(2) At several hill stations the troops were attacked first or contemporaneously with the civil population.

(3.) Out of twenty-six stations of British troops attacked by cholera in 1872, the annual statistics of which are given, only six yielded cholera cases in 1871; but a reference to Dr. Cuningham's report for 1871 shows that deaths from cholera were registered in 1871 in every district (except perhaps at certain hill stations) among the civil population in which these twenty-six stations are situated."

Now suppose the question had been, instead of "how cholera got into the station?" "how got small-pox or scarlet fever there?" the circumstances of previous prevalence among the surrounding population being held as of no account. The failure to discover the link of connection must have been just as complete as it was to discover the link of connection with cholera, even assuming that cholera had been contagious after the same fashion (which it is not), but this failure by no means implies that the link does not exist. Here is the fallacy which Dr. Cuningham stumbled over, and which the Army Sanitary Commission fails to see. Grouping the results of Dr. Cuningham's inquiry on this subject, the Commission write, "Outbreaks in which no source of importation *could be* traced," 88; the fact being, "Outbreaks in which no source of importation *was* traced." The one form of expression, the first, implies that both the method and conditions of inquiry admitted of its being properly and thoroughly prosecuted; the other form of expression implies nothing more than the fact, irrespective of method and conditions of inquiry. The one form of expression betrays inexperience in dealing with complicated etiological questions; the other form avoids the implication of an important opinion touching the whole question under the apparent cover of a mere statement of fact.

Of the question of communicability of cholera after it had gained admission to stations, the Commission observe that "the information is not always so very specific in character."

Proceeding with their examination of Dr. Cuningham's report, the Commission observe upon the notes and inquiries attached—in other words, the statement of facts upon which Dr. Cuningham founds his conclusions—as follows:—

"One section of the notes refers to the local sanitary conditions accompanying the great mortality among British troops in 1872. These notes purport to have been drawn up at affected stations by local sanitary advisers, and yet we can find little to help us to reply to the main practical question raised by this report—namely, what removable conditions can be grappled with so as to diminish the susceptibility to cholera among troops in future. In regard to some outbreaks, no allusion is made to the subject. In most cases the information is limited to casual remarks about the drainage or about wells.

> "As no reference is made to the condition of the water-supply as shown in the reports on water analyses at the stations, there are no means of estimating the relation between the quality of the water and the amount of cholera.
>
> "There is no evidence to sustain a current theory that cholera poison conveyed in water is the cause of cholera."

These remarkable sentences are probably unique in the sanitary literature of the present day. We have here the deliberately expressed statement of the Commission that with regard to the localising causes of cholera—the causes to which practical measures can be applied, and which should solely concern their functions—that the reports are so imperfect as to be almost valueless. Nevertheless, reports which do not touch the only controllable causes of cholera of which we have any experience, —which are wholly insufficient as to the data they furnish for common sanitary purposes, are held by the Commission to be sufficient foundation for the formation of opinions adverse to existing knowledge of some of the most complex questions of etiology! Nay more, the data which are insufficient for common practical sanitary purposes, and which do not include ordinary information even as to the chemical quality of the water-supply, are held to justify the Commission in expressing the conclusion that they are adverse to the opinion that cholera may be propagated through the water supply! Nor is this all. As if to make absurdity still more absurd, the Commission, by the phraseology of the last sentence quoted, namely—"a current theory that cholera poison conveyed in water is *the* cause of cholera"—betray a complete unacquaintance with English and European knowledge on the subject, for no such theory exists or ever did exist, as the simplest reference to so common a work on Hygiene as Professor Parkes's would have shown.

This is an example of what passes for sanitary science at the India office, and of the reasoning which is suffered to guide the vast interests involved in sanitary research and practice in India! The opinion of the Commission on Dr. Cuningham's report already quoted:—"that it has brought questions regarding cholera to an issue. The appeal now made sets aside all opinion and theories, and requires to be answered solely by facts,"—must be read in the light of these sentences.

The question here touched upon, of the value of Dr. Cuningham's data for the scientific purposes to which he has applied them, is so essential that we quote two of the Commission's practical conclusions on the subject:—

> "The reports contain very little information regarding the sanitary condition of affected localities, and in the present state of sanitary knowledge Government has a right to expect that the reports on epidemic diseases from stational sanitary authorities should deal especially with local causes. The authorities should report on their nature and extent in detail, together with the steps taken for their removal.
>
> "From a number of stations casual notices lead to the impression that tho hygrometrical condition of the subsoil, and the subsoil water level, may have exerted an important local influence on the intensity of cholera, and that this point, which has been frequently urged for many years past, should be taken up and dealt with."

In other words, in all that concerns the study of those local conditions, the minute examination of which in Europe has, during the last twenty years, been so prolific in knowledge of the etiology of cholera, the reports are radically defective; yet in the opinion of the Commission they suffice for dealing with the most complex questions, and render necessary a reconsideration of European teachings on the subject!

We need not wonder now at the marvellous character of Indian sanitary reporting. It is obvious that everybody—medical, engineer, military, civilian, &c.—is deemed to be capable of treating of every phase of sanitary science irrespectively, and that the value of the opinion is determined solely by the administrative position of the individual. The one essential thing is clearly that everybody should express his opinion in writing upon everything within the scope of a report, regardless of previous training or fitness. The Army Sanitary Commission is a mixed commission of military men, engineers, and medical men, exceptionally qualified for dealing with the practical aspects of sanitary work, but having obviously no qualification to deal with those questions of sanitary research which demand above all things special training and experience. The very notion of submitting to a mixed Commission, notwithstanding the deserved respect in which the individual members may be held for their particular qualifications, questions which demand for their examination competent judgment, special training, and special knowledge, shocks common sense, to say nothing of scientific sense. The natural result must be, as is now threatened, to dissociate Indian sanitary research and practice from European sanitary research and practice, as if these were essentially different things to be governed by different principles of ratiocination. These questions of etiology are necessarily medical questions, and the effect of submitting the reports of competent medical observers, so far as these relate to matters of etiology, to the comments of the Army Medical Commission, must deteriorate medical sanitary work. What encouragement can be afforded to medical men to pursue difficult etiological researches in India, if they are to be ultimately subjected to crude observations such as the Army Sanitary Commission make upon them? How much of the indifference displayed in the notes of inquiries attached to Dr. Cuningham's report, and their imperfections, rests with the want of respect which must be very generally felt for the ordeal of ill-advised and injudicious criticism to which the reports would be exposed?

The question deserves the consideration both of the India Office and of the Indian Government. When we reflect upon the wealth of talent which official medicine possesses in India, and compare the meagreness of its contributions of late years to the scientific etiology of cholera, compared with what has been done in this country, it is obvious that medicine in India must be placed under some particular disadvantages that do not exist here. Foremost among these, we believe, is that vicious system of indiscriminate accumulative criticism we have described. We see no certain hope of escape from the difficulties of this system, and of due justice being done to the vast sanitary interests of India, except by giving to the Medical Officer of the Indian Council special sanitary functions, or by the appointment at the India Office, in addition to its present distinguished medical adviser, of a medical sanitary adviser, whose previous experience and scientific training would command the respect equally of the trained sanitary knowledge of Europe and of India. India has more than one man competent for the post, and whose appointment would mark the most important step yet made to bring the vast works now being undertaken for the sanitary benefit of India into some common accord.

THE HEALTH OF OUR WATERING-PLACES AND HEALTH-RESORTS.

It is not sufficiently well known that the Registrar-General now in his second quarterly report for the year, customarily gives a special section to watering-places and health-resorts. He brings together in this section the more important data as to the mortality, during the same quarter, of the registration districts or sub-districts in which the principal resorts are placed, and taking these as indications of the probable health-state of the different places, suggests their utility as a guide for visitors to them. The time has not yet come, we apprehend, when the temporary fugitives from towns to the sea-side and the country will care to govern the direction of their pleasant flight by considerations of death and disease in the places they fly to. Other and more grateful considerations of locality and scenery will doubtless most potently influence their decision. But there are some who, having regard to invalids and especially to young families, may find it desirable to give some attention to the probable state of health of, and prevalence of infectious disease in, places, in making a selection. To these persons a knowledge of the feature of the Registrar-General's Second Quarterly Report to which we have referred will be of utility. It will also be of use to medical men who may be called upon to advise as to resorts.

The death-rate of the quarter, which constitutes the chief element of the Registrar-General's indication, is approximative only. But as we are assured by him that the elements of doubt in it as a rule neutralize each other, they need not be discussed here, and there can be no good reason for not accepting the facts he gives in the sense he would have them accepted, namely, "as useful guides with others to aid inquirers in their endeavours to place their families for a season in healthy localities." The Registrar-General points out that all the districts containing the English health-resorts are under the charge of medical officers of health, and that the sanitary authorities in some, as Llandudno, are engaged in carrying out extensive sanitary works.

It is to be regretted that the publication of the report takes place almost too late to be available for the guidance of visitors to health-resorts, but we give the facts as recorded.

Districts or Sub-districts containing the principal English Watering Places ranged in the order of their Mortality during the Second or Spring Quarter of 1875.

	Annual Rate of Mortality per 1000 living, from	
	All Causes.	Seven Principal Zymotic Diseases.
England and Wales	21·9	
Seaside Towns.		
Littlehampton	12·6	1·7
Bognor	12·7	0·0
Weston-super-Mare	13·5	0·7
Southend	13·9	0·5
Dover	14·6	0·5
New Brighton	15·2	1·2
Scarborough	15·3	1·4
Torquay	15·5	0·8
Weymouth	16·0	1·5
Ramsgate and Broadstairs	16·0	0·7
Tenby	16·2	0·4
Herne Bay	16·6	0·7
Sidmouth	16·8	0·3
Exmouth	17·2	1·0
Eastbourne and Seaford	17·3	4·0*
Yarmouth	17·5	1·8
Brighton and Hove	17·8	1·4
Lowestoft	17·8	1·7
Blackpool and Fleetwood	17·9	2·3*
Isle of Wight	18·0	1·2
Dawlish and Teignmouth	18·3	1·6
Dartmouth	19·4	0·6
Worthing	19·6	0·3
Deal and Walmer	19·8	0·9
England and Wales	21·9	
Seaside Towns—*continued.*		
Hastings and St. Leonards	20·6	1·0
Beaumaris	20·8	0·6
Rhyl	20·9	0·6
Margate	21·7	1·7
Lyme Regis	22·9	1·9
Folkestone	23·0	3·5*
Penzance	23·0	2·0
Ilfracombe	23·2	1·8
Whitby	24·2	3·8*
Aberystwith	24·4	2·6*
Southport	25·2	2·6*
Bangor	25·8	1·7
Llandudno†	28·0	2·6*
Inland Towns.		
Buxton	13·0	0·5
Clifton	15·4	2·1
Tunbridge Wells	16·6	0·6
Leamington	16·9	1·0
Malvern	17·4	2·4
Matlock	18·7	0·7
Bath	19·2	0·7
Cheltenham	19·3	0·5
Harrogate	20·8	0·3

* The details of the deaths which caused a Zymotic rate exceeding 2 per 1000 in the districts or sub-districts containing the following towns, are:

Eastbourne and Seaford; 10 deaths were referred to whooping-cough, 4 to fever, 1 to diphtheria, and 1 to measles.

Blackpool and Fleetwood; 3 deaths were referred to diarrhœa, 2 to fever, 2 to scarlet fever, 2 to whooping-cough, 1 to diphtheria, and 1 to small-pox.

Folkestone; 15 deaths were referred to measles, 1 to small-pox, 1 to fever, and 1 to diarrhœa.

Whitby; 11 deaths were referred to whooping-cough, 2 to fever, 1 to diarrhœa, and 1 to diphtheria.

Aberystwith: 7 deaths were referred to measles.

Southport; 7 deaths were referred to whooping-cough, 4 to diphtheria, 2 to fever, 2 to diarrhœa, 1 to measles, and 1 to scarlet fever.

Llandudno; 2 deaths were referred to whooping-cough, 2 to fever, and 2 to diarrhœa.

† The Health Officer states that of the 28 deaths in the town of Llandudno, 9 were of visitors, not one in sound health on arrival.

A Report of Microscopical and Physiological Researches into the Nature of the Agent or Agents producing Cholera.—2d Ser. By T. R. Lewis, M.B. and D. D. Cuningham, M.B., 8vo. pp. 60. Calcutta.

This work is one of the Appendices to the Tenth Annual Report of the Sanitary Commissioner with the Government of India, and small though it be it contains much valuable matter, the result of many laborious experiments. The work is already so much condensed that almost every sentence in it should be read with care and re-read by those who are interested in the subject of the causation of cholera. The first part contains an account of the microscopic examinations of blood made by the authors in order to decide as far as possible whether or not any organism which might be regarded as the cause of cholera exists in the blood of persons suffering from this disease. They draw particular attention to the deceptive appearances resulting from the rapid erosion of the thin covering glasses in India. These sometimes simulate milky spots, cells, and bacteria. The authors point out that the appearance of the "zone immobile" of bacteria, observed by MM. Coze and Felz as well as by M. Davaine in certain infectious diseases, agrees very closely with that due to glass erosions, and that the latter might very easily be mistaken for or confounded with organic particles. The echination or tuberculation of red corpuscles on which some authors have laid much stress, can be produced by the pressure of the covering glass, but sometimes occurs in healthy blood independently either of pressure or evaporation. Granular and molecular matter, which might be supposed to be of a bacteroid nature, almost invariably becomes liberated from the white corpuscles during the process of disintegration, and motile particles, the nature of which is undetermined, are sometimes observed in the blood of persons apparently in perfect health. Fibrinous threads were twice seen, but fungi were absent except on one occasion when they were probably due to accidental contamination. In no instance were bacteria observed. Considerable leucocytosis was present. The red corpuscles were diffluent. In order to determine whether the blood in diseases which are certainly inoculable differed from that in cholera, the authors examined it in vaccinia and syphilis, but in neither disease could they detect any foreign organisms.

Having thus failed to detect bacteria or their germs as an essential feature in the blood of cholera, vaccinia and syphilis, the authors next tried to ascertain under what circumstances such bodies are to be found. They occur both in the blood and tissues of healthy animals, especially in the mesenteric glands and mucous membrane of the small intestine, but it is probable that they are developed after death. In one case they were observed in abundance immediately after death, but when the animal was killed, it was already moribund from inflammation induced by the injection of liquor ammonia into its peritoneal cavity. In some healthy animals long and jointed bodies, resembling Cohn's *Bacillus subtilis*, were found, and this suggested that the presence of "Bacteridia" in malignant pustules might be more a consequence than a cause of the disease, especially as Cohn refers these particular "Bacteridia" to the genus *Bacillus*. If septicæmia and diseases of a similar nature were due to the presence either of vegetable organisms or of living matter of any kind, the virus by which they are communicated ought to lose its activity when they are killed by heat, but this is not the case, for Striker and Panum find that boiling does not affect the virus of septicæmia, and Davaine states that neither boiling nor rapid desiccation affect that of charbon.

In many of the diseases to which a vegetable origin has been assigned, the blood affords evidence of considerable leucocytosis, but as far as the authors' observations go, leucocytosis is incompatible with the simultaneous development of bacteria in the blood, the latter being worsted in the struggle for existence, or as we may perhaps more plainly put it, being eaten up by the leucocytes.

The conclusion at which the authors arrive is that "it is possible that all the diseases ascribed to vegetable parasites, may in reality be due to the influence of such organisms, but the proof of it has yet to be produced, and it is no real advance to ascribe them to such an origin on insufficient ground. This theory has attractions for many on account of the apparently simple explanation which if true, it would afford of the multiplication of disease poisons. But even allowing that such a multiplication could only take place under the influence of living matter, not as the result of any mere chemical process, it must always be borne in mind that the manufacture of the poison must in any case occur under the influence of multitudes of living cells and particles, cells and particles which may be just as capable of elaborating poisons as vegetable organisms or other living matter introduced from without.

The second part of the work treats of the effects produced by the introduction of choleraic and other fluids into the system. Both cholera dejections and those of persons in good health when injected into the veins of dogs act in some cases as a poison, producing disorganisation of the intestinal mucous membrane. The symptoms and pathological changes induced by both substances are alike, but strained choleraic dejections produce positive results in 44·7 per cent., while solutions, by no means weak, of normal alvine discharges, gave them in only 26·9 per cent., or only a little over half the former number. Excrementitious matters produced a much greater effect when introduced into the abdominal cavity than when injected into the blood, for in the former case they caused serious inflammation and commonly death in 76.9 per cent. Inflammatory products were not so active, for similar experiments with them were only successful in 23 per cent. The application of heat up to the boiling point did not modify the toxic properties of the particular substances tested; for when boiled cholera evacuations were injected, 47 per cent. of the dogs were affected or rather more than when unboiled dejections were employed, and when boiled ordinary alvine discharges were injected, the percentage was 23, or rather less than when unboiled were used. In this power of retaining their virulence after boiling, alvine dejections correspond with cobra poison, which the authors, like Fayrer and Lauder Brunton, found to be active after exposure to a temperature of 212° Fahr. In the third part of the report, the authors confirm the statement of Moreau that complete section of the mesenteric nerves causes profuse flow of fluid into the intestine, and find, like Lauder Brunton and Pye-Smith,[1] that this result is not induced by division of the splanchnic nerves even when this is combined with excision of the semilunar ganglia.

[1] Reports of the British Association for 1874.

THE PRACTITIONER.

OCTOBER, 1875.

Original Communications.

ON THE PALLIATIVE AND REMEDIAL EFFECTS OF SUBCUTANEOUS INJECTION OF MORPHIA IN CHRONIC BRIGHT'S DISEASE.

BY R. PARK, L.F.P.S.G. L.S.A., ETC.

FEW beliefs have taken such deep root in the professional mind as that opium or morphia are injurious in cases of Bright's disease whether acute or chronic; and that especially where uræmic symptoms have developed themselves, they or their salts, are specially contra-indicated. And there can be no doubt that the belief is well founded so far as the administration of these drugs by the mouth is concerned. The irritable and easily deranged, or already deranged, condition of all the chylo-poietic viscera almost forbids the use of opiates either by mouth or rectum. And yet I feel sure that few practitioners have attended many cases, or any cases, of Bright's disease without feeling a strong inclination, at some period of the case, to administer opium in some form; and bitterly regretting that he could not give his patient the benefit of its anodyne properties without subjecting him to the risk of increased gastric disturbance or the supervention of cerebral disturbance. It might have been supposed that the novel effects flowing from the use of morphia subcutaneously injected would have led to its earlier use in this as in other diseases where, previously to the discovery of this method, it had been contra-indicated. The prejudice against its use was so deeply rooted, however, that I am not aware of any case on record where it has been used systematically as a palliative and remedial agent. As the subject is one fraught with so much interest to the profession and a numerous class of patients I hasten to lay before them a condensed clinical history of a patient who has been under my care since December 20, 1873, and whose illness has just terminated in death (July 30, 1875).

I. S., spinster, æt 38½ years, of spare habit, and pale complexion, had an attack of scarlet fever when she was at school and æt. 16 years. This was followed by dropsy and a long and imperfect convalescence. Has never had perfectly good health since. Has always had an eczematous affection of the skin. Three years ago had a severe illness, the exact nature of which cannot be made out owing to the demise of the practitioner who then attended her. From patient's own statements, however, supposed to have been an illness similar to that from which she is now suffering. At present she has œdema of feet and anasarca of thighs and legs. She has not slept for three nights, not being able to get down her head. Accordingly does not go to bed now but sits in arm-chair. Loud bruits over the mitral and aortic valves. Liver not enlarged. Tongue *quite* clean. Bowels free. Pulse 140. Urine ¼ albumen. Hab. P. jal. co. and Febrifuge, Spongio-piline to loins.

January 10, 1875.—Patient considerably better. Urine somewhat less albuminous. Skin affection very troublesome and extremely dry. Had the benefit of a consultation with Professor McCall Anderson who advised blanket baths and French diuretic wine. Under this treatment she rallied wonderfully and by February 12, was able to be down stairs and go about the sitting-room a little. Urine is still albuminous, however, to the extent of ⅙ of the test tube.

May 9.—The old symptoms have recurred (œdema, anasarca, fever), in addition to which patient has an acute pain in the region of the heart. The bruits which had temporarily disappeared have reappeared. Dyspnœa is persistent. The sense of impending death is acute and agonizing. There is a tendency to sleep but it is prevented by the sense of suffocation. When she does sleep she has horrible dreams. To have blanket baths once daily. Mixture containing digitalis three times daily. Belladonna plaster over cardiac region.

May 30.—Since last report she has had an interval of tolerable comfort. To-day, however, she is much worse. Her heart's action is very turbulent. She is distressed with flatulence and retching. The fox-glove is disagreeing. The tincture is tried in another combination. Turpentine stupes are applied over the epigastrium. Has an assafœtida pill and a draught—ut infra:

℞ Chloral gr. 20
Liq. opii sed. (Battley) gutt. 5
Sodæ bicarb. gr. 5
Aquæ chloroformi fl. oz. 1.
Ft. Hst. stat. sumend.

May 31.—Has spent a very restless night, but an improvement on previous night. As no bad results accrued from the five drops of Battley, I resolved to-day, as the pain at the heart was most severe and the orthopnœa persistent, to try the subcutaneous injection of morphia. Accordingly the $\frac{1}{6}$ of a grain was slowly injected under the skin of the arm. The result of this was such as to lead me to believe that a larger dose might be injected without harm at least; and so in the evening the injection was repeated to the extent of $\frac{1}{4}$ of a grain. The effects were as remarkable as they were unlooked for. The turbulent action of the heart became tranquillised, the very rapid pulse gave way to one slower, fuller, and softer, and in the course of an hour the patient was enabled to lay her head on her pillow and get a refreshing sleep.

June 1.—Patient has passed a much quieter night than she has done for a fortnight. As the digitalis still disagreed with her stomach I discontinued its internal administration and ordered instead a strong infusion to be applied on spongio-piline along with some digitalis leaves over the region of the heart, and I may state here that this application was continuously applied after this till her demise. The subcutaneous injection of morphia was repeated, rather more than $\frac{1}{4}$ of a grain being administered. As I felt considerably the responsibility of using these injections, however, I explained the matter to my patient and asked for a consultation.

June 2.—Subcutaneous injection omitted till after consultation. Hab. pil. assafœtid. co.

June 3.—To-day a practitioner of local eminence consulted with me. We found the patient very ill. Orthopnœa very great and turbulent action of heart most distressing. Urine contained about ⅓ of albumen. Ordered 20 gr. P. jal. co. every morning. Tr. aconiti (Flem.) one drop every four hours to allay the turbulent action of the heart. Prognosis, death very soon. Sub. inj. of morphia to be pursued with extreme caution. It was with great misgivings I allowed my patient to take the aconite, and I only gave ½ a drop for a dose—Fleming's tincture being the preparation used. She hadn't taken the first dose more than half-an-hour when I was sent for in great haste. On arrival I found all the previous symptoms greatly intensified. The pulse was barely perceptible at the wrist, a cold clammy sweat bedewed the surface of the body and the extremities were quite cold. Evidently syncope was impending. Hot foxglove infusion was applied at once over the heart, hot sinapisms to the extremities; and whilst an attendant on each side aided the natural respiratory efforts by holding the arms elevated I administered ether by inhalation. This was continued for an hour, when it became evident that something intended to produce a more enduring alteration in the state of the circulation must be attempted. The pulse, although now perceptible at the wrist, was extremely weak and almost uncountable. Reflecting upon the effect of the previous subcutaneous injections in strengthening the heart's action and moderating the pulse I determined to try it as a last resort, first warning the patient and her relatives that the result might be different from what I expected. I then injected (taking nearly half-an-hour to do so, and closely watching the effects upon the pulse and breathing while I did so), fully 1¼ grain of morphia. The solution used was the one ordinarily used, viz. 1 grain in 6 minims of distilled water, being solid at ordinary temperatures. Of this 8 minims were injected. The result was so far satisfactory that I was able to leave her in less than half-an-hour after the completion of the injection in a state of comparative comfort, and on my next visit a couple of hours after I found her in a calm slumber.

June 22, 1875.—Since last report patient has, almost continuously, been dangerously ill; and but for the subcutaneous injections, I do not think her life could have been prolonged thus far. To-day I had the benefit of a consultation with Professor Anderson. The learned Professor ascertained that she had œdema of the lower lobes of both lungs which I had suspected for several days. He advised a continuance of the injections as they did not appear to be injurious; an occasional blanket bath when possible, systematic use of cream of tartar, and a bismuth and iron tonic. Also that chloral should be tried occasionally as a substitute for the injections. Prognosis very unfavourable.

June 29.—Since last record the patient has suffered more from gastro-bilious symptoms and diarrhœa. Morning retching has been especially severe upon her, and it seemed to be worse when the injections were *intermitted* and chloral given instead at night to procure rest. The œdema of lungs and anasarca of lower limbs has entirely disappeared, and upon the whole, the patient is miraculously well. Takes food moderately well. Very little or no stimulants. Urine contains about $\frac{1}{6}$ of albumen.

July 24, 1875.—The history of the case since last record has simply consisted of a succession of febrile exacerbations (during which the subcutaneous injections had to be had recourse to, sometimes once, sometimes twice, daily, for the relief of anginous symptoms and the procuring of rest), followed by transient periods of semi-convalescence. The febrile exacerbations were signalised by a rise of the pulse to 130 or 140, œdema of the feet, morning retching and insomnia. When these symptoms manifested themselves the patient invariably sought for the injections, and as the case progressed I became conscious that, apart from their palliative influence they were exerting a remedial influence likewise, inasmuch as the febrile attacks were gradually shortened and the circulation generally tranquillised, and the œdema removed so that, at the last, I found myself using an agent which I had at first employed as a last resource to palliate agonizing angina, as a true remedial agent for many of the secondary evils which follow in the train of Bright's disease. During the last six weeks of my patient's life I used the injection regularly every evening, giving generally $\frac{1}{2}$ a grain, but not more. As the urine became scantier and more and more albuminous, the œdema increased and ascites followed. Then the functions of the liver became depraved, an icteric tint overspread the skin, the features became stamped with the well-known characters of renal cachexia, the lungs became again œdematous, and it was apparent that the end was at hand. On the 23rd a tendency to somnolence was noticed and the subcutaneous injection was omitted. On the following morning involuntary twitchings of various sets of muscles were observed. These continued more or less till the 27th, when they ceased. Somnolency now was the chief feature, and it gradually deepened till noon of the 30th, when the patient died comatose.

Remarks.—It will be apparent that the foregoing clinical history is not put forth as a perfect record of the case of Bright's disease, but is intended solely to place in as striking relief as possible the one fact that morphia may be administered subcutaneously in this disease not only without danger but with positive safety and benefit. Doubtless some hospital physician having the material at his command will enlighten us as to the rules to be observed in different cases for its administration, and the kind of cases in which it is of most use. I think the indication which generally guided me in its administration was great disturbance of the circulation and nervous excitement, and I think I would consider these a sufficient indication in the treatment of another case.

August 14, 1875.—Postscript. It is very satisfactory to note that Dr. Potter (*Boston Med. and Surg. Jour.*) as quoted in the *Practitioner* for this month, has treated a case of uræmia successfully with morphia injections: and that Dr. Loomis in his work reviewed in this week's *Lancet* advocates its employment in the same condition.

ON THE PLACE OF THE EXCRETIONS IN NATIVE PRACTICE IN INDIA.

BY SURGEON-MAJOR WILLIAM CURRAN, A.M.D.

While conversing in September '73 with an old native doctor at Peshawur, about a case of ovarian disease on which I had just operated with a fatal result, and after bespeaking his aid in procuring me others of like character, which he promised to do, he suddenly surprised me by asking why I had not given my patient the benefit of camel's urine, which he added was a common remedy among natives for all kinds of dropsy. Startled or rather reminded by the mention of this strange remedy that I had already given some attention to the same subject, I inquired if he had any experiences of its virtues himself, and he assured me in reply that several years previously, while stationed on the frontiers of Sindh, he had prescribed it largely among the Beloochees and others from Klelat, and that he found it of great use in cases of dyspepsia, splenic enlargement, and intermittent fever. On speaking the following morning to the Eurasian apothecary of the regiment of which I was then in charge, he confirmed the above, and added that his own servants were at that very time using camel's urine for fever. In fact, he said that the lower classes of natives had great faith in the antiperiodic properties of that fluid; and another experienced subordinate informed me that he had seen at Lucknow excellent effects from the daily application of asses' urine to the heads of two Mohammedan boys, aged respectively ten and twelve, who had suffered for several years from what he called "scabies of the head," and for which all the usual remedies, British and Indian, were tried in vain. Armed with these several testimonies, I rode into the city and asked the intelligent native assistant-surgeon attached to the dispensary there if he had seen or heard of any instances in point, and he at once told me that he was just then treating two boys for splenitis, with their own urine. He subsequently gave me some particulars, bearing on this kind of practice, which I purpose summarising further on; and these, coupled or rather supplemented by such details as I have been able to glean from other sources myself, will form the basis of the superstructure which I here intend raising on them.

To discuss the subject from any other than a local standpoint would be incompatible with the scope of this little paper, as well as *extra vires*, inasmuch as I have no old books on Materia Medica to which I might refer; and besides, the readers of this journal require no aid from me in any search they may feel disposed to make into the question. Suffice it, then, to say that their employment in medicine is as old as the days of Aristotle, if not older, but I have no copy of that writer at hand to confirm or disprove this statement, and, moreover, the search would scarcely repay its own trouble. I have, however, Pliny's "Historia Naturalis" by me, and in that I find several references to their uses.[1] Strange to say these are almost identical with those in which they are prescribed in the native works that I have been able to consult, and include such entries as the following:—"Contra ocularum albugines, obscuritates cicatrices" . . . "Adversus eruptiones in corpore infantium" . . . "Adversias canis rabidi morsus" . . . "Contraque serpentium ictus," &c. It would be also, and for the same reasons, beside our purpose to inquire into their use in former times in the practice of medicine in Europe,[2] for the day is past when any physician would recommend "Sterc Murium"[1] or "Sterc Hom,"[2] and though less disgusting, they ought to be

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[1] Caii Plinii Secundi, *Historia Naturalis*, Lib. viii. 414, xxviii. 13 and 18.

[2] If I except the occasional, but now, I believe, increasingly-rare use made by veterinary practitioners of cow-dung as an application to the hoofs of horses in country districts in Great Britain, the belief which many of the working classes entertain in the efficacy of their own urine in chapped hands and some forms of ophthalmia, I know of only one other class of persons who recommend the excretions medicinally, and these are the trainers or fighters of cocks; I believe, however, that a kindred fraternity, viz. that of the dog-fanciers, occasionally resort to the use of urine for the removal of ascarides from their pets, but of this I am not certain; and as to the former, a writer, one Gervase Markham, of a very rare and now almost unprocurable book, entitled *The Way to get Wealth*, London,

1648, treating in his chapter "On Country Contentments," p. 112, of the best manner of rearing and training cocks, recommends the use of this fluid after a fashion which is as simple as it is unique. After prescribing the hour at which the "cocke" of the period should be taken out of his stove, he says: "Then taking a good handful of bread, small cut, put it into his trough, and then ——— into the trough, also give it him to eate, so as he may take his breast out of the warme urine, for this will make his scouring worke and cleanse both his head and body wonderfully." And in his chapter "Of the Ordering of Cockes after Battell," p. 116, he desires his readers to search the cock's wounds and "then to washe them very well with warme urine to keep them from rankling." In like manner and to the same effect does another old admirer of this classic diversion speak. This worthy, after laying down rules respecting the manner in which a young cock should be placed on his walk and taught to spar, advises his clients in *The Royal Pastime of Cock-Fighting*, Lond. 1709, pp. 50-74, to give their young cocks at roosting time "white bread toast soaked in warm urin, for there is nothing," he observes, "that tempers and cleanses a cock after sparring better than such a toast. Also," he adds, "let the head and feet of the cocks be well suppled and bathed in warm urin, and then put them up to roost." For full-grown cocks, after sparring, he recommends "a pill of white sugar-candy, rosemary, fetherfew, and ground ivy," which should be put, just before being administered, into "warm urin," and then it will, he engages, "cleanse a cock of grease, add to his strength, and lengthen his wind." Further on, p. 67, he advises that the fighting birds should be fed on bread "steept in urin," and finally, in his chapter of "How the Wounded Cocks after Battell should be Ordered," he directs: "Then wash him with warm urin and . . . give him five or six bits of soft white bread diped in warm urin." The author of another old book, *The Compleat Gamester*, Lond. 1725, which is long since out of print, is equally emphatic in his enforcement of the easy hydraulic process referred to above, which he says, the birds may "feed while the urine is hot, for this will cause their scouring to worke and will wonderfully cleanse both head and body;" and, "the battle being ended," he recommends that search should be made for the cock's wounds, and when found, "then," he continues, p. 209, "wash them well with warm urine." Should their heads be swelled on the following morning, he advises a repetition of the same treatment, after which they should have "a good handfull of bread to eate out of warme urine." A Mr. T. Fairfax, the author of a book called *The Compleat Sportsman*, Lond. 1758, recommends precisely the same line of treatment at pp. 7-10; and my friend Mr. Astley, Hus. 11th Regt., to whom I am mainly indebted for these references, than whom there is not, *crede experto*, a more expert healer or a skilfuller handler of cocks in the British army, assures me that very similar measures are adopted by the "fancy" out here. I have also seen it stated somewhere that the Spaniards and Portuguese of Manilla and Macao are partial to the use of the same fluid under circumstances akin to those noted above, and I find that an American physician (*Game Fowls*, by T. W. Cooper, West-chester, Pa.) recommends, *inter alia*, that the feet, legs, and heads of cocks should be washed for three or four days before they fight "in chamber-lye," which means, I take it, in slang parlance, urine.

[1] *De Morbis Cutaneis*, by Daniel Turner, Lond. 1714, pp. 135-7.

[2] The late Dr. Henderson, of Edinburgh, established, if I mistake not, the fact that this substance was once used in medicine by references to old phar-

quite as efficacious as the "blood of a black cat," the "flesh of a tiger," the "powder of a swallow's nest," or "fasting spittle," notwithstanding that the latter is said to be "as detersive and mundifying as urine."[1] Yet all these, and a good many more equally absurd or objectionable articles, are recommended in a comparatively modern work;[2] and Smollett,[3] a physician by profession, frequently alludes to the use of urine for purposes of resuscitation or otherwise. In fact, these and other works of like import are within the reach of all, and the cynicism of the latter has often betrayed him into descriptions whose repulsiveness is not their least reprehensible feature, and compared with which the coarseness of Swift's account of the Yahoos may pass for politeness.

Superstition has in this as in other phases of our art played strange pranks, and the reverence with which that stupid animal the cow is regarded throughout this country has everywhere invested her discharges with a peculiar efficacy.[4]

Their use, too, is not confined to any one province or part of this great peninsula, but appears to be common to all of them. For example, the Rev. E. Chester,[5] M.D. of Dindigul, in the Madras Presidency, commenting, in a paper "On Medical

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macopœias, which he unearthed in a controversy on homœopathy he waged for some time in the press, with his better known and more orthodox colleague, the late Sir James T. Simpson, of the same city.

[1] Turner, ob. cit. p. 50.

[2] Ibid. passim.

[3] *The Miscellaneous Works of Tobias Smollet*, Roscoe's ed. pp. 263-697, 8, and 735-95, 6.

[4] Dr. Temple Wright, late Professor of Medicine at the Lahore Medical College, writing to me on this subject says: "Natives use the urine and fæces of various animals, in various diseases, but only in the same way as the Mussulmans of all countries use pills consisting of texts of the Koran—from an idea of their sacredness. Thus, in Bengal the people use the *excreta* of the cow, not only from the notion that anything belonging to such a sacred animal will purge them from fever, but also to purify themselves from the stain of any offence they may have committed against caste." And further on he adds: "At Muttra, where an immense colony of sacred monkeys has for ages occupied the tops of the houses and trees in the city, the people—mostly Hindoos—worship the monkeys, feed them, and use their *excreta* in medicine." Except that, as proved in the text, the people here referred to ascribe a more purely therapeutic value to these substances than Dr. Wright's words imply, this extract is literally true; and Dr. Chevers informs me that all his students "are acquainted with the use of cow's and calf's urine in the villages of Bengal."

[5] *Report of the Allahabad Missionary Conference in* 1872-73, p. 203.

Missions" that was read before a Missionary Conference a year or two ago at Allahabad, observed that "native doctors sometimes use the vilest medicines and enjoin the performance of superstitious ceremonies;" and Dr. Chevers,[1] alluding to the use of arsenic as an aphrodisiac in India, adds in a note which is based on native testimony, that "two plans" of modifying the medicinal properties of this drug "are practised near Midnapore. In the first the arsenic is powdered and macerated in *cow's urine* for thirty-six hours;" and further on in the same page he quotes a "Native Surgeon Moodelly" as saying that "in Madras arsenic, as well as all powerful native medicines, is subjected to a series of boilings in milk, cow-dung, urine, the juices of leaves, &c., and is then said to be purified." Dr. Day, of the Madras Army, says in the *Indian Medical Gazette* for January 1871, p. 8, that he was "informed by an eminent medical officer in Calcutta, that hilsa fish are sold in one part of that city as food, after having been prepared by soaking in stale urine" in another. So that there can be no doubt as to a belief in the virtues of this secretion on the part of the natives of this country; and as to the other excretion of the same animal, cow-dung has been used medicinally in this country from time immemorial. I have myself frequently seen it employed as a coating over the forehead and temples for the relief of headache, and several of the remoter hill tribes use it as a protection and covering to their wounds. The Caffres and Hottentots resort, I am credibly informed, to a similar expedient; and M. Guinard[2] informs us that the Patagonians "provoke the maturity of their abscesses by the application of poultices of hot animal dung." Again, Captain Langley,[3] who was for some time attached to the suite of Meer Ali Moorad of Sindh, describing the treatment employed by the Hakeems of that country for an abdominal abscess in the person of one of the prince's sons, says that after making a gash "full six inches in length" in the poor youth's abdomen, they "plugged it up with pledgets of rag steeped in a kind of balsam, then laid thereon a quantity of boiled murgoid leaves, placing over all a large lump of clay kneaded with cow-dung and oil;" and it is almost needless to add that these measures produced such an amount of irritation as necessitated an application for aid to the surgeon of the nearest station, who removed the mass and had the wound dressed, *secundum artem,* with the usual result.

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[1] *A Manual of Medical Jurisprudence for India*, p. 117.
[2] *Three Years' Slavery among the Patagonians*, p. 175.
[3] *A Residence at the Court of Meer Ali Moorad*, vol. ii. p. 205.

In order to understand the principles on which the excretions are employed by the Hindoo Baids or Koberajes—physicians—on the one hand, and by the Mohammedan Hakeems or Jurrahs on the other, it will be necessary to premise that the former derive their knowledge of medicine, such as it is, from the sacred writings or traditions of their priests, while the latter are indebted for any information they possess on these points to the Arabian writers, who, in turn, have borrowed their ideas of it from the Greeks.[1] The two systems may be conveniently classified under the headings of Baidak, or Old Sanscrit, and Yunani, or ancient Greek, and in both the blood, bile, mucus, and urine are recognised as the four fluids of the body. These, if disordered or out of proportion, are supposed to give rise to disease, and as the temperament, in other words the variations, of the animal heat are taken as the gauge of this, all remedies are said to possess, in addition to their other properties, the great attributes of heat and coldness. Such a classification is clearly conducive to simplicity, and a glance—for it must, for obvious reasons, be nothing more—at the virtues ascribed to these substances in the first-named system, as well as an enumeration of the diseases in which they are said to be efficacious, is all that I can indulge in here. A similarly short measure of treatment will be bestowed on the other or Greek system, and a few general reflections on the influence in or action on the economy of the articles referred to within will appropriately bring this paper to a close. To begin, then, with the former, a book called "Lushrit," which is, I am told, a standard Baidak work, thus describes the properties of urine in general: "The urine of the cow, buffalo, goat, sheep, elephant, horse, ass, and camel is bitter, acrid, and saline, light (*i.e.,* easily digestible) and evacuant;" and as to its uses, it "dispels diseases due to morbid mucus and gas, it removes worms and disorders of the fatty tissue, it acts as an antidote to poisons, and finally aids in the cure or mitigation of flatus, piles, jaundice, and dropsical effusions of every kind." Another Sanscrit work, the "Bhao-Prakash," enters into an equally elaborate description of the properties, physical and otherwise, of the urine of various animals, which for the efficacy it ascribes to this article, as well as for the variety of disorders it is capable of curing, may pass for an advertisement of Holloway's pills, or Old Jacob Townsend's sarsaparilla. It further informs us that human urine "neutralises the effects of poison, purifies the system, and acts as a powerful detergent in foul sores and in scabies purulenta;" and as to the diseases in which it is said to be efficacious, their name is simply legion. They include such widely divergent conditions as colic, costiveness, and tympanitis, jaundice, dysentery, and leprosy, mania and earache; and asses' urine is regarded in both as a specific against dyspepsia.

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[1] For some interesting particulars bearing, though somewhat remotely, on these points, I would refer the curious reader to the thirteenth number of the *Indian Annals of Medical Science*, pp. 87-111.

In the Greek or Yunani system, then, the urine of man is taken as a standard, and that of the camel and the ox comes next in point of estimation. According to the "Makrum-ul-Advint," or Magazine of Medicine, the urine which thickens under the stimulus of heat, that is, which contains albumen, is unparalleled in its effects on indolent ulcers, and in causing the contraction of fistulous passages, and it is also peculiarly efficacious as a wash or embrocation, in the treatment of itch, impetigo, tinea favosa, and other forms of cutaneous ulceration. It is further credited with antidotal powers against the effects of bites from mad dogs, snakes, and venomous insects of all kinds, and its efficacy in reducing enlargement of the spleen is supposed to be enhanced by its being taken on an empty stomach, or being boiled in a copper vessel. When mixed with honey, it is said to aid in the dispersion of opacities of the cornea and in the cure of chronic ulcers of the conjunctiva. Its virtues are, however, subject to variation under the influence of age, and the urine of boys or girls, under puberty, is said to be endued with a therapeutic potency that is denied to that of their elders. In short, there is scarcely a single domestic animal from whose urine, according to these books, some curative benefit cannot be derived, and even that of the dog is not omitted. The urine of the horse appears, however, to be preferred in the Greek system to that of the cow, for it is often said to cure a nebula, while that of his congener, the ass, is said to be all-powerful in the treatment of nephralgia and gout. On the other hand, the urine of the camel and buffalo is prescribed in cases of impotence and earache; and Dr. Chevers tells me that "there used to be a rhinoceros at Barrackpore whose urine (very strong stuff it was said to be) was in great request, and brought in a little revenue to its owner. There is now, I am told, one at Dum-Dum, whose piddle has a great repute in asthma." This bears out what I have already said as to the universality of the popular belief in the medicinal value of this fluid; and accordingly we find that a product which is so readily procured or so easily applied is frequently resorted to, or regarded as a remedy, by the superstitious inhabitants of our remote villages in the plain, and by the half-savage and more fanatical denizens of the less accessible hills. Of its use among the former I have, I think, given proof enough above; and I will subjoin below a short summary of such statements respecting its employment among the wild tribes of the Koord-Cabul and Hindoo Koosh or Hayara Ranges, as I could glean from conversations with themselves or other sources.

Mr. Nethercole, a superintending engineer of the Indus Valley Railway, has informed me, since the above was written, that he has frequently seen his camel-driver dismount when travelling in Sindh, and renovate the flagging spirits of his camel by administering to him a pick-me-up of his own urine. This he does by passing it through the heel of his shoe into the brute's stomach, whereupon the latter starts off as lively as ever. Burton tells us, in his "History of Sindh," p. 144, that "the contents of the karura (urinal) are carefully scrutinised" by the native practitioners of that province; and a similar practice prevails in other widely separated parts of this country. It prevails also, I am told, much nearer home than either of these places.

From some of the wild hill-men who bring firewood, &c., to Peshawur, I learned that the urine of young children and of the cow is frequently used by their women—more, however, by way of external application than as an internal remedy. And the intelligent native surgeon to whom I am indebted for some of these details informed me that the Pathans in that neighbourhood regard buffalo's urine with favour in tertian ague. He also learned, from inquiries among this people, that the first thing a wounded Pathan does is to wash his wounds with his own or a companion's urine—giving the preference, however, to that of the latter; and a poultice made up of wheat flour and boiling urine is a favourite application among them for certain forms of ophthalmia. As already intimated, all the wild tribes on this frontier—to wit, the Momunds, Wuyerrees, Kyberees, &c.,—have faith in the efficacy of camel's urine in ascites and anasarca, and as, from their dirty habits, venereal disease is very common among them, they treat the sores produced by it on the genitals with buffalo's urine. The women are particularly partial to this mode of treatment; and they also steam inflamed wounds and sloughing ulcers with the vapour that is evolved from the burning of children's urine. The latter is also not unfrequently employed amongst them as a remedy in cases of bronchitis and sore-throat; indeed, their commonest cure for a cold is a copious draught of warm urine at bed-time, after which the invalid envelops himself in a heap of blankets, then eats a quantity of heated garlic, and generally rises in the morning quite well.

Captain Lowrie, commenting in his *Wild Races of South-Eastern India*, pp. 196–243, on their ignorance of disease and remedies, says: "There is but one medicine current among all the Zoringhia; this is the dried gall-bladder and the dung of the boa-constrictor, which is supposed to be, and is used as, a remedy for everything." Further on, p. 246, he says, another tribe use these substances "as a universal remedy."

I have just translated from the Persian, with the aid of our native purveyor here, a work called "Hay-ul-Buddun," or "Remedies for the Body," which is written by no less a personage than a (native) professor in one of our medical colleges out here, and in this I find numerous references to the use or value of these substances in the system. So numerous, indeed, are these, that the merest recapitulation of them would fill several columns of this journal, and that being so, and feeling that any further allusion to them would savour of anachronism or reaction, I pass on at once to the other, and perhaps more objectionable, phase of the question.

As in the case of the urine, so also in that of the dung or excrements, minute descriptions are given in both systems, as to the manner in which they should be used or applied; but as a formal enumeration of these would take us out of our depth, and lead at the same time to no practical result, I will content myself with glancing here at those applications of them which are most frequently resorted to by the ignorant natives of this country. Of the several animals whose dung is regarded as curative either outwardly or otherwise, that of the cow holds the first place, and the disorders in which this is said to be beneficial include almost all those to which our flesh is heir. Thus, among the properties ascribed to it, I find that it is deobstruent, absorbent, styptic, and expectorant; and mixed with honey and long-pepper in the one instance, or with vinegar and oil of bitter almonds in the other, or applied locally, it gives relief in such opposite conditions as cough and bronchitis, alopæcia, tinea favosa and epistasis, prolapsus uteri, rheumatism, and sciatica. Burning the dry dung in the lying-in chamber is said to aid the throes of parturition, while its application in the moist state over the hypogastric region of a pregnant woman is supposed to be capable of expelling a dead fœtus or killing a live one; and certainly no application is more frequent in the present day, in this country, than that of cow-dung to the irritable hoofs or swollen fetlocks of horses. Those barren women who hanker after the honours of maternity will be pleased to know that a suppository of hare's dung is supposed to favour impregnation; and Mr. Holthouse may be gratified at hearing that a tigress's excrements mixed with urine have been found to aid in the suppression of dypsomania. According to the authorities from which I quote, the dung of even the ass has its uses; and as to those of the elephant and the camel, are they not said to dry up the scars caused by porrigo and other forms of exematous or scabby ulceration, to arrest hæmorrhage, and reduce the ravages of epilepsy and scrofula? Finally, and to close this rather odorous enumeration, the human excreta, and especially so those of a child, are said to be useful, by way of insufflation as a powder, in cynanche tonsillaris, and also as an outward application in cases of erysipelas, foul smelling ulcers, and for the bites of venomous insects. Describing the remedies employed by the "barber-surgeons" who practise among the inhabitants of the Yusufzoie, on the Peshawur frontier, Dr. Lyal says, in the *Indian Annals of Medical Science* for October 1854, p. 39, in allusion to the hæmorrhagic complications of the fever that obtains in those parts: "When they suffer from hæmorrhage from the nostrils, the mode adopted is to grind asses' dung into fine powder, and use it as snuff." Taken internally in drachm doses, or rubbed, after being burnt, on the jaws, it is said to remove the fœtor caused by a cancrum oris, to relieve jaundice, or stop a colic or diarrhœa; and on the *similia similibus* principle, I suppose, it assists, when applied in combination with yeast over the belly, in the cure of constipation. But we need not pursue the inquiry any further, and a short survey of the manner in which these substances may be supposed to act on or influence the economy, will enable us to dismiss the subject altogether.

The "urine," according to Dr. Hill,[1] "is pungent and slightly bitterish and saltish. It is slightly laxative, and cures diseases of phlegm and wind (*sic*), and diseases produced by worms and from poison. It is also of use in leprosy and in dropsical swellings, jaundice and dyspepsia; cow's urine is generally preferred;" and when we find, to use the words of Dr. Livingstone,[2] "a medicine in use in one part of the country, and the same plant employed by a tribe a thousand miles distant," we must come to the conclusion that "this surely must arise from some inherent virtue in the plant." If we substitute the word *urine* for that of *plant*, the language employed by this great explorer will apply without any serious modification to the subject of our inquiry, for it is quite certain that this fluid is used with a therapeutic purpose, in one form or another, throughout the length and breadth of this great peninsula, and my readers need not be again reminded that this use is not solely, or even in great part, due to the suggestions of superstition. We all know that the character of the food largely determines the quality of this secretion, and that while the "urine of carnivorous animals does not differ essentially from that of man, the urine of herbivorous differs considerably from that of carnivorous animals." On the other hand, the urine of birds and of amphibious animals, reptiles, &c., differs so much from both the above as to show 'that the organisation of the animal exercises a distinct influence over the composition of its urine;"[1] and the greater predominance of the chlorides, urates, and phosphates in the former is placed by chemistry beyond the reach of doubt. How far the food or constitution of the cow may affect her secretions I am unable to say, as I know of no analysis of either; but when we remember that this discharge may contain in greater or lesser abundance, and under varying conditions of health or climate, traces of such diverse substances as ammonia, phosphorus, chlorine, and sulphuric acid, and that it is moreover "the most complex of the excretions, particularly as to saline impregnation,"[2] we will, perhaps, be able to form a probable opinion as to the manner in which it may be supposed to act. What I have seen of its application myself would incline me to believe that it is capable of cleansing the surface and destroying the fœtor of foul sores, and I have also seen instances among the natives, in which its administration was said by the sufferers and their attendants to remove dyspepsia and diminish enlargements of the spleen. We have lately seen it used with impunity, in place of water, by the survivors of the *Cospatrick;* and reminding my readers, on the authority of one[3] whose words on this or any other kindred question are deserving of the highest consideration, that "in taking to the use of pure urea and nitrate of urea we are at least a thousand years behind the Indian *Vedas,*" I must leave the further investigation of the subject in their hands.[4]

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[1] *The History of Medicine in Bengal*, vol. 1. p. 1.

[2] *Missionary Travels and Researches in South Africa*, pp. 648, 649.

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[1] Neubauer and Vogel's *Guide*, Sydenham Society's translation, p. 4, &c. See also Pavy's *Treatise on Food and Dietetics*, p. 449; and Dr. Irvine long since observed that the Seths (Mirihauts) of Ajmere were so well aware of this fact that they "actually fed their cows and buffaloes on raisins, almonds, and pistachio nuts," to improve the quality of their milk. (*The General and Medical Topography of Ajmere*, by R. H. Irvine, M.D., p. 101.)

[2] See article "Excretion," in Todd's *Cyclopædia*, vol. ii. p. 149.

[3] Dr. Norman Chevers.

[4] In reference to the diuretic action of urea *vide* Uslemovitsch Ludwig's

The action of the excrements on the economy can be more easily gauged, inasmuch as they are known to "consist of a mixture composed of undigested particles of food, such as cellular-tissue, fragments of tendon, skin, half-digested muscular fibre, &c., &c., and not unfrequently of fat, starch, and sugar,"[1] the very elements from which we are told those who are inclined to obesity ought to abstain. So much is this the case that animals have been known to thrive on them alone, as was shown by the Commission which sat in '61–62, under the orders of Sir Hugh Rose, to investigate the subject of commissariat supplies to our troops in this country, whose inquiries elicited the extraordinary fact "that in many of the largest stations in the North-west Provinces, commissariat sheep were . . . . fed on human ordure, contracted for by commissariat butchers with the conservancy establishments attached to troops in the stations."[2] Of this disgusting practice I was myself a witness in an outlying station, about this time; and when we remember that, owing to that irritability of the canal which is so common a concomitant of disease in this country, the aliment is hurried so rapidly through it as to escape the action of the intestinal juices, and be "recovered from the fæces in an almost unchanged condition,"[3] we may easily account for the eagerness with which this horrible supply was sought after and procured. When stationed at Cawnpore, some ten years ago or more, I had frequent opportunities of seeing the pigs of certain Chumar (sweeper) villagers who lived near the rifle range of those days, feeding on the garbage that was sent out there from the barracks and hospitals of that large cantonment, and the flesh of these filthy pariahs was eagerly purchased by the married families of my old corps. Of course tape-worm was very common amongst them, but this they did not mind, so anxious were they to diversify the monotony of their ordinary fare; and bacon of any kind is a luxury to the European in India. I have seen the fresh dung of a cow applied with benefit over the sloughing bubo of a European

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Arbeiten, 1870, p. 222. The stimulating action of urine, especially after keeping, is probably due not to urea, but to the ammonia salts into which it becomes decomposed.—Ed. *Pract.*

[1] Day's *Physiological Chemistry*, pp. 193-8.

[2] *Agra Weekly Register* for May, 1862.

[3] Todd, op. cit. vol. iv. p. 458.

soldier; and combinations[1] of this animal's discharges have, and will, I fear, ever continue to be in request among Hindoos. Whether the education which is now everywhere illuminating the dark places of this land will, in time, falsify this apprehension or not I cannot say, but superstition and prejudice are weeds that require a long time to remove, and the physician or philosopher may be permitted to indulge a hope that there is a feeling implanted in the breast of man, however degraded he may be, which will guard him against such a contamination—nay, make him turn with loathing from a substance that even the dog only partakes of under pressure.

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[1] This constitutes the very basis and essence of Hindoo pharmacy, and their "Phunsaries," or druggists, openly say "that the efficacy is not in the substance itself, but in the combination" of it with the various and often utterly incompatible articles they use. (Dr. Irvine, op. cit. p. 123.)

TREATMENT OF PORRIGO, TINEA FAVOSA, ETC.

BY HENRY MACCORMAC, M.D.

THE too frequently disheartening results of the treatment of the cutaneous affections engendered by the achorion Schoenleinii, trichophyton tonsurans, and microsporon furfur, are only too well known to all members of the profession. I suppose it is now about twenty years since I attended a fine young girl for fever and meningitis immediately consequent on the forcible abstraction of a pitch cap which some empiric had put on and torn off for tinea capitis. The case proved fatal. I have resorted, but with very indifferent success, to all the current remedies. But since I have employed petroleum the results have proved very different. This remedy is simple in application, it is safe to use, and a marked improvement, my own experience regarded, invariably ensues whenever it is resorted to.

I do not now recollect exactly what first induced me to have recourse to petroleum. A difficulty in using this remedy, *nil* in itself, is created very often by the patient's or the patient's friends' want of faith in any treatment. They try it carelessly and perfunctorily for a few weeks, then perhaps cast it aside.

The first thing I do, the scalp being concerned, is to clip or, where it can be done, or as far as it can be done, shave the hair closely off, and keep it so. In cases that have been neglected, it will be desirable to premise a few simple poultices, bread or linseed meal. I direct the petroleum to be applied twice daily, by inunction, in the form of one part petroleum to two of lard and a few drops of oil of lavender or, say from half a pint to a pint of petroleum in a pound of lard, with twenty drops of oil of lavender. The vessel or jar which contains these, may be stood in a basin of boiling water, occasionally renewed, stirring with a wooden spatula until the whole is intimately blended.

This unguent is to be applied, gently but thoroughly, once or if it be practicable, twice daily. A soft brush is a very good implement to use, and the ointment when about to be applied, may be moderately warmed beforehand by standing the cup or gallipot, which contains it, in hot water. Judgment must be used in apportioning the strength of the ointment and the amount of the application to the state of the parts and the irritability of the subject. After the application a piece of dry soft clean linen rag may be laid on—an old cambric handkerchief answers very well—and over all, a soft clean linen cap.

Before the next application of the petroleum ointment, the head must be thoroughly but gently washed with black or fish soap and fresh warm soft water. The ointment is then to be reapplied as before. Every rag or cap, once used and past further use, should be thrown into the fire, but if intended for further use, plunged in a hot soda ley, and after being well washed, finally rinsed in water containing a little carbolic acid.

The last instance of porrigo which I had to deal with, was in a cutler's daughter. Her case was rather a distressing one, with many sores, the hair had mostly disappeared, and there were vermin as well. The very first application proved advantageous, and the patient did well in every respect, except as to regaining her hair, afterward. The family have removed, and I cannot speak of the young woman's present state, but I have no reason to doubt but that it is satisfactory.

In a recent case of trichophyton tonsurans in a youth of eighteen, a large patch of hair, producing great disfigurement, was absent. I must here observe that I had begun with pencilling a weak alcoholic solution of corrosive sublimate over the parts. I then had recourse to the petroleum ointment and black soap. The case, after some continuance of treatment, has done extremely well. A vigorous growth of hair now covers the previously denuded surface. A preceding case of trychophyton occurred in a pretty young Jewess. A naked patch rather larger than a crown piece, subsisted at the very vertex. The young lady has since married, and the vertex, when I saw her last, bears no trace of having ever been wanting in respect of its hairy covering.

I wish to add that the petroleum ointment with black soap, is an excellent remedy in itch, removing it with ease and safety. It is a capital remedy for lice, destroying them on the pubis, in the axilla, or on the head. In two or three instances where these hideous vermin had extended over the whole surface, the petroleum ointment with black soap and the warm bath, employed twice daily, removed them with magical celerity. In insane persons, whereon vermin often house, petroleum ointment and soap, proves most useful. So far as I have had an opportunity of trying it, I find the petroleum alike serviceable in the mange of dogs, swine, and horses, destroying the minute parasites along with the cutaneous affections which they engender.

Under these circumstances I perused with great satisfaction in the *Independente* of Turin, No. 16, for June 1875, the fact of a case of the achorion Schoenleinii, which had resisted all previous treatment, yielding to the local application of petroleum. Here, there was a large and thick crust of tinea favosa, as produced by the above-named parasite, which had subsisted on the arm for years, and which had been vainly treated in Turin and other Italian cities. The treatment consisted in the application of linseed meal poultices, coupled with swabbing the affected parts, several times daily, with petroleum. The crusts fell off and were reproduced no more. After a fortnight's treatment the results were most satisfactory (*l'effetto era brillantissimo*). This treatment was followed up by another fortnight's application after which the disease had disappeared wholly. Three months afterwards, upon examining the patient, there was no longer the slightest trace of the malady. Should these results be confirmed by the general experience of the profession —and I think I have made out a case—it would realise a most desirable innovation in regard of dealing with a hitherto most intractable, as well as most unpleasant class of maladies.

DELHI SORE OR BOIL.

BY JOSEPH FAYRER, C.S.I., M.D., F.R.S.E.

Honorary Physician to Her Majesty the Queen, Physician to H. R. H. the Duke of Edinburgh.

Synonyms.—Aurungzebe—after the Emperor of Delhi of that name, who suffered from the disease; Scinde boil; Moultan sore; Balkhea, from Balkh, where it is attributed to the bite of a black gnat; Bouton d'Alep, Aleppo Evil; Bouton de Bussorah; Bouton de Baghdad; Bouton de Biskra, from Biskra, a military station in Constantine, Algeria; Pustule d'un An; Habbet el Seneh (Arabic); Phlyctis Endemica (Alibert).

Definition.—An indurated, indolent sore, papular in the early, encrusted or fungating in the advanced stages; spreading by ulceration of skin; single or multiple, often occupying extensive surfaces of the exposed parts of the body, such as the face, neck, and extremities. Due to peculiar cell-growths; referred by some authorities to the ova of Distoma; by others, to products of abnormal nutrition, infiltrating the normal tissues, and capable, if inoculated, of reproducing the disease; also affects dogs and horses. Is very intractable.

Geographical Distribution.—India, especially the Northwest Provinces, Punjab, Cabul and Scinde, Persia, Arabia, Crete, the Sahara of Africa, perhaps China, and doubtless wherever certain peculiar conditions of soil and hot climate co-exist. Though called Delhi boil, it is neither a furunculus, nor is it peculiar to that city. The Scinde boil, the sores of Roorkie, Moultan, Lahore, Meerut, other crowded Indian cities, and Aden, are probably only varieties, if not identical. The same may be said of the Bouton d'Alep, the Biskra Bouton, Bussorah Bouton, Baghdad Bouton. Slight differences may exist, but essentially they are the same disease. The Yeman and Cochin China sores are probably varieties, as are other indolent indurated and intractable sores occurring in persons of impaired health, the result of residence in hot and malarious climates; and in whom there is no syphilitic taint to account for them.[1]

PATHOLOGY AND SYMPTOMS.—It commences as a small pink and reddish papule, like a mosquito bite, which gradually extends, generally around a hair follicle as its centre. This is elevated, and after a time desquamates. There is itching and a stinging sense of pain; on pressure it is somewhat boggy. Progress is slow, often occupying several weeks, during which time it assumes a semi-transparent appearance with blood-vessels ramifying near the surface. A vesicle rises, bursts, and gives exit to an ichor which forms a crust; under this, suppuration and ulceration take place and progress until, by the coalescence of several papules and destruction of skin, an indurated sore is formed, which is either crusted over or fungates. If cut into, yellowish points are seen, consisting of minute cellular growths, which have been described by some as the ova of a parasite (*Distoma*), but are now generally considered to be the result of cell-growth connected with the hair and gland follicles, perhaps an abnormal development of connective tissue corpuscles, or an imperfect form of granulation. After ulceration has disintegrated the surface, mycelium or other low forms of organism may be present, but this is not the essential cause, and is rather an accident of the disease, introduced from without. The progress is slow, but it gradually invades the surrounding parts, and, destroying the integument, may give rise, especially on the face, to deformity from cicatricial contraction; and from the irritation and the pain it causes, may, when the number and extent of the cores are large, seriously compromise the health. An ordinary boil or abrasion not unfrequently assumes these specific characters. It is regarded as contagious, and apparently may be produced by inoculation of the specific cell matter, though not by the pus which forms on the surface.

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[1] It has been suggested by Drs. Tilbury Fox and Farquhar that the term Oriental or Tropical Sore ought to be given.

Etiology.—Drs. Fleming and Smith, of the Army Medical Department, give the best account of the disease. Though called a local disease, it is probable that the state of the health has much to say to its production, certain conditions of climate, soil, and water being concerned. Furunculi of a severe and painful though different character are prevalent in hot climates at certain seasons of the year; in enervating and malarious climates like India, especially after the rains, *i.e.*, towards the termination of the most exhausting season, when the vital powers have been depressed during the preceding months, and the functions of the liver and spleen are impaired. The blood, imperfectly elaborated, and not freed from excrementitious matter, is then in a condition in which it not only ministers imperfectly to nutrition, but is prone to fibrinous coagulations, which cause capillary embolism, giving rise to local starvation and death of minute portions of areolar tissue in or under the integument. These result in suppuration, which is set up for the purpose of getting rid of the dead fragment or core. An analogous, though perhaps not precisely similar, pathological condition may be concerned in the causation of the Delhi Sore, and is not incompatible with an otherwise fairly good condition of the general health. Water, soil, food, bites or stings of insects, parasites, insanitary conditions, such as exist in crowded native cities, have all been charged with causing the disease. Improved hygiene, planting of trees, change of water, food and locality, have all been credited with benefit in the treatment of it. The fact of this peculiar form of sore manifesting itself under similar climatic conditions in other parts of the world, which, it is to be noted, are generally those of the more arid regions, and that they occur most frequently at the most exhausting season, seem to point to a constitutional state as the predisposing cause.

The disease is not confined to human beings; in Delhi it has been observed that dogs are very liable to be affected, especially in the nose, and this, from the position of the sore, has been adduced as strong evidence in favour of the theory that it is due to the presence of a parasitic ovum which finds its way there from the water.

In some districts other animals are affected, and it seems probable that the indolent, indurated, and intractable sores that horses are liable to in India, called Bursattie (Rain Sore) is of the same character. Further investigation into the causation and pathology is needed, especially with reference to the cellular structures that evidently are the essential constituents of the disease, but it is tolerably certain that they are not of extraneous origin, and are not the ova of any parasite, but are rather due to abnormal cell-growths.

PREVENTION AND TREATMENT.—Cleanliness of person, clothing, and habitation, good food and water with careful attention to the sanitary condition of the locality,—avoiding overcrowding and contact with the disease in men or animals,—change of locality, when practicable; early destruction of the sore by potential or actual cautery; the application of metallic astringents—iodine or carbolic acid lotion; pressure, attention to the state of the health, and any ailment that may be present; tonics and nutritive diet; removal to another climate,—are the measures most likely to prove effective.

In the advanced conditions of the disease similar measures are indicated. The sore may be too extensive to be destroyed, and should be dressed with stimulating and astringent applications—soothing measures when there is much suffering. The black wash; sulphates and carbolates of zinc, copper, Gurjun oil, and lime water, or applications of a similar nature, added to these change of climate and tonic and strengthening remedies, will generally, sooner or later, prove efficient.

A NEW FORM OF BEDGOWN FOR SICKNESS.

BY THOMAS JOYCE, M.D. (EDIN.), CRANBROOK.

THERE are many cases of illness in which it is desirable to minimise to the utmost the pain and trouble of changing linen, yet the ordinary form of bedgown is so little adapted to fulfil such conditions that patients are often compelled to forego the comfort of a change rather than encounter the distress it entails.

This was so brought home to me in a case of acute rheumatic arthritis in a lad lately under my care, in which nearly all the large joints were affected, that I devised a bedgown on the plan of the accompanying sketch. It is made to unbutton completely down in front, and the arms and shoulder-pieces are also made to unbutton quite up to the neck. In putting it on it is only necessary to spread it out flat on the bed and lower the patient on it, *i.e.*, if he is in a condition to be raised, or to

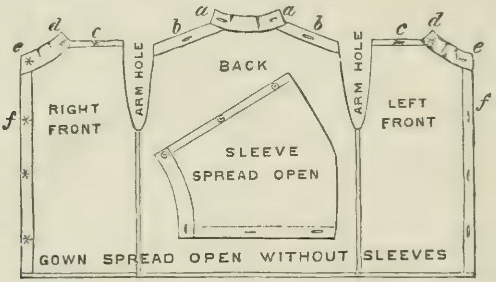

FIG. 1.—This represents the gown spread open before the sleeves, one of which is also represented, have been sewn to the arm-holes; *a* buttons to *a*, *b* to *c*, *d* to *d*, *e* to *e*, and *f* to *f*.

push it under him if he is not, and then button up the front, sleeves, and shoulder-pieces. The soiled one can then be unbuttoned and drawn down from underneath. In the case for which I had two made they proved most useful, as any joint could be at once reached by unbuttoning, without being disturbed by motion. A belief that it will prove of equal use and comfort in many other cases induces me to make known the plan, simple though it is, to the profession.

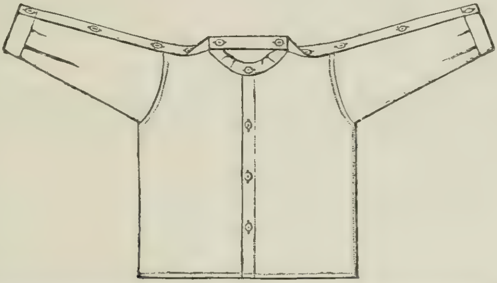

FIG. 2. represents the gown buttoned. It may of course be made longer than is represented in the engraving.

DIARRHŒA—ITS VARIETIES AND TREATMENT.

BY J. MILNER FOTHERGILL, M.D.

DIARRHŒA may be a salutary process or an affection threatening existence—according to circumstance. Even when commencing as the first it may eventually run into the latter. The bowel is not only the means by which absorption goes on, and the nutritive matter of our food is assimilated, but it is also the means by which unassimilable material is got rid of. When a quantity of overripe or decaying fruit is devoured, a sharp diarrhœa, by effecting the discharge of the offending matter, is the natural and best means of remedying affairs. Not rarely such diarrhœa is preceded or accompanied by emesis. In a similar way superfluous bile is ejected by what are called bilious attacks. The excess of bile discharged into the intestines by the bile-ducts is re-absorbed, again cast out and then re-absorbed time after time. At intervals the bile and the other contents of the intestines are swept away in diarrhœa. After this there is experienced a sense of briskness, of energy, never felt when bile is present in excess in the potal circulation. Here the diarrhœa is a natural process of the most beneficial character. In a similar way when the stomach contains indigestible material, which is not got rid of by vomiting, but which passes the pyloric ring, when this reaches the intestines the best thing is its speedy ejection. This is very commonly seen in the diarrhœa which is so prevalent during suckling, both in infants and in young animals. Under these circumstances the diarrhœa usually originates from the excessive curding of milk in the stomach. This may take place either from the milk being swallowed hastily, and so not being well mixed with saliva—a common course of excessive curding—or there may be existing a preternaturally acid condition of the digestive canal, and then the milk forms a firm and utterly indigestible curd, which can only be disposed of by vomiting or by purging. The first is swift, effectual, and uncontrollable. The second is slower, less perfect, and unfortunately somewhat under the control of certain antagonistic—one cannot say remedial—measures. Too frequently in the human infant and calf the income of purgation is the signal for the administration of various members of the pharmacopœia. Astringents and various preparations of opium are the usual agents employed. By such means the natural and wholesome process is thwarted more or less effectually, and the indigestible material retained within the intestine, causing considerable irritation, pain, and discomfort. If the natural efforts are equal to overcoming the unfortunate therapeutic measures the offending matter is got rid of, and all is well. Far from uncommonly, the process is so far checked that an irritating and persistent diarrhœa, consisting of small fluid motions, often offensive in odour, and always preceded by acute griping, obtains for some days. This may have two results. If the offending matter be ejected it is well; if not, the irritation may go on to enteric inflammation. This last is a very common result in calves subjected to the energetic measures of the farmer's wife or the dairyman, but not an ordinary result in the human infant. Nevertheless, it may and does occur. When the diarrhœa is of the character just mentioned, and has obtained for some little time, the therapeutic measure indicated is a full dose of castor oil. This is the real state of matters. The irritant mass sets up intestinal action and secretion below itself and so is not removed thereby, such being the case in ineffective diarrhœa; or the natural action set up is sufficient, but is checked by mechanical agents. The administration of a dose of castor oil sweeps the mass away and then the diarrhœa usually ceases at once. Many years ago a farmer's wife complained to me that her children suffered from persistent diarrhœa, which the ordinary chalk, opium, and catechu mixture was unequal to arresting. After a good deal of cross-questioning it turned out that the family was living chiefly on salted meat, being the winter season. A good dose of castor oil each, followed by a more suitable dietary, had the result of doing away with the necessity for resort to the medicine bottle.

At times, however, this form of diarrhœa persists as intestinal catarrh, requiring its appropriate treatment. Ere considering this part of the subject it may be well to review another kind of diarrhœa which may persist in a like form.

Diarrhœa is not rarely the consequence of a chill. Instead of the ordinary cold, a sharp action of the bowels comes on, especially in those whose digestive canal is easily disturbed. Here the activity may either quickly moderate spontaneously, or persist. The measures here indicated are those suited to the treatment of cold, viz., a full dose of opium alone, or as Dover's powder, hot fluids containing alcohol, and a warm bath. Usually these measures are sufficient to secure the desired end.

At other times the intestinal action persists, as it may when originating in a process of natural ejection of indigestible matter. This may be brought about either as a consequence of irritation existing for some time, and so inducing persistent action, or the morbid action may remain as a species of acquired habit. When no more enduring diarrhœa is set up, a change in our remedial measures is indicated. In some cases the small repeated discharges from the bowel produce excoriation of the anus, while each stool is called forth by intense intestinal pain, ceasing on the evacuation of the acrid fluid. Here it is good practice to give opiates along with fixed alkalies, as in the well-known ckalk and catechu mixture, or chalk and opium powder. The fixed alkalies not being absorbed, come in contact with the acid secretions of the lower bowel and so neutralise them. It may even be desirable to resort to enemata of laudanum and starch with a little alkali in each. This last device often gives great relief. At the same time the food should consist of bland materials, as milk and seltzer water, boiled sago or arrowroot, or ground rice. In any form of diarrhœa, indeed, it is of great importance to attend to the diet, which should consist of milk—always rather binding —starch in any form, either with milk or beef-tea.

In the persistent diarrhœa of infants accompanied by much kicking up of the legs, abdominal pain, often severe, if measured by the little patient's cries, sour smelling stools, containing undigested curd, and frequent "possetting," or eructation and vomiting of curded milk, the following combination will be found useful—℞ pot. bicarb. gr. ii. ol. cajeput. m. i. aq. anethi or cinnamoni, ℨii. every four or six hours. If the infant be fed by bottle some lime water may be advantageously added to the milk; if fed by breast the mother had better take some alkalies, either medicinally or in the form of Vals, Vichy, or Marienbad waters.

At other times the diarrhœa may pass on from simple acute diarrhœa to the condition of intestinal catarrh. If this be acute and accompanied by follicular ulceration, it assumes the form just described; but it may persist rather as a simple catarrh. Here we find that in addition to the fluid contents of the bowels, no longer changed by the normal absorption, there is a considerable quantity of mucus, often more or less purulent, and even at times a serous exudation of a green colour, from the presence of bile. The mucous lining of the intestinal canal is altered, being thickened and swollen, while the fluids poured into the bowels are no longer efficiently re-absorbed. Under such circumstances of chronic diarrhœa, opium, from its effects in lessening the activity not only of the peristaltic movements but also of the secretion of the intestinal canal, is indicated in fair doses; and with it may be combined mineral astringents, as acetate of lead, sulphate of copper, or the pernitrate of iron. More commonly opium is given along with dilute sulphuric acid, or aromatic sulphuric acid, and a vegetable astringent, as hæmatoxylin. The last is a most valuable drug, it is palatable and easily taken, and at the same time most efficient. In the chronic diarrhœa of children it is very serviceable; its only drawback is its property as a dye. If spilt on the napkin or passed *per anum* on a diaper it leaves its bright red stain. This, however, is a comparatively unimportant matter. If the case be obstinate the astringent mixture may be given three times a day, and ten or fifteen grains of compound kino powder every night at bed-time, or a grain and a half of opium with ten grains of trisnitrate of bismuth, or five each of bismuth and myrrh powder, may be added with advantage. Such measures with a proper dietary will usually be found effective.

Nervous diarrhœa is a variety with which we are all more or less familiar. An uncontrollable action of the bowels is an indication of mortal fear in animals as well as man. There is increased peristaltic action with relaxation of the sphincter. In a less acute form we find increased action of the bowels in persons undergoing much mental perturbation. In some persons mental agitation invariably produces diarrhœa, just as in others it produces palpitation. Many persons always suffer from diarrhœa when setting off on a journey. This has become more markedly the case since the introduction of railways with express trains only stopping at long intervals, and then scarcely staying long enough to afford an opportunity to empty the bowels. In many persons the very idea of taking a railway journey will induce diarrhœa, and in some cases this becomes so pronounced that railway travelling is abandoned. In less marked cases there is always diarrhœa as the hour of starting approaches, and brandy with some laudanum has to be taken, and repeated pulls at a flask during the journey are requisite to control the bowels, or rather the imagination and the bowels together. In such persons a preventive plan may be put in force with advantage. The day before travelling the bowels may be well opened with rhubarb—which first opens the bowels and then locks them up as a secondary action—and if necessary a dose of opium in myrrh or bismuth, or a few grains of compound soap pill, may be taken at bed-time. The diet should consist of milk, and farinaceous foods, sago, tapioca pudding, maccaroni, (*au gratin* for those with whom cheese agrees), while all irritant food should be carefully avoided.

At other times diarrhœa, persistent or repeated, is a consequence of congestion of the portal circulation. Very commonly it is the result of obstruction in the liver, especially when that organ is the subject of cirrhosis. Here the substance of the liver is compressed and bound down by contractile and contracting pathological connective tissue; and in this compression the blood-vessels share; not uncommonly, indeed, the venous radicles are the subject of phlebitis; and then the flow of the portal circulation is interrupted. As a consequence, the venules of the intestinal canal are turgid and full, and a serous fluid drains away from the mucous surface of the bowels. Very commonly at the same time there is an accumulation of fluid in the peritoneum from a like condition of the venules of the serous membrane. The diarrhœa which shows itself under these circumstances is a natural discharge, affording relief; and, instead of attempting to check it, it often becomes desirable to increase it by the administration of cathartics.

In determining upon the plan of treatment of any diarrhœa, it first behoves the practitioner to make his diagnosis clear, first as to the exact amount of the discharge, and secondly, what is far more important, to determine carefully and painstakingly what that discharge is due to. It is often as necessary to nurse and even encourage a diarrhœa as it is at other times imperative to arrest it. The popular impression that every abnormal discharge is to be arrested, is as fallacious as the impression that purgatives are indicated in the locked-up bowels of ileus. A striking and painful instance of this will be given shortly, which will be followed by an equally illustrative case of the good to be derived from declining to arrest a diarrhœa under certain circumstances.

What holds good of the diarrhœa of cirrhosis and ascites holds equally good of the serous diarrhœa, which is so commonly found in the later stages of valvular disease of the heart, or of right side failure from obstruction in the pulmonary circulation due to chronic disease in the lungs. Under these circumstances, there is general venous fulness, and this is most felt in the radicles of the valveless portal circulation. Consequently, there is gastric catarrh, with its pathognomonic symptom, persistent sense of fulness, and a looseness of the bowels, often ascending to sharp diarrhœa. Here it is also far from good practice to attempt to arrest the intestinal flux by astringent remedies. It is better far to nurse it, as long as it is not positively and unquestionably doing harm; and to do away with the necessity for it by acting upon the heart by digitalis and iron. If the circulation can be improved, and the condition of venous congestion done away with, then the diarrhœa will pass away with the condition upon which it causally depends. This method of treating it is both rational and effective. Sometimes a little serous oozing remains after a free spontaneous catharsis under these circumstances, or after its induction by mechanical agents, and this teazes the patient at night, either causing him to get up, or passing off during sleep. A dose of five grains of myrrh and ten of bismuth at bed-time will be found effective here, and may be resorted to without the fear which attaches to opium and its derivatives. Of course it may become necessary to resort to astringent measures; and if it is so, sulphuric acid, with hæmatoxylin, or the astringent preparations of iron, are the best means of attaining the desired end. But the only treatment, as a rule, to be invariably followed is the relief of that condition of the portal circulation upon which the diarrhœa depends.

At other times diarrhœa may be a compensatory action of the bowels, especially in conditions of renal embarrassment. Here it is termed uræmic diarrhœa. This is a much more common condition than is generally imagined. It is, however, one of those matters which is not patent to the casual observer, and is one which can only be detected ordinarily by the eye which has learned to see it. In the diarrhœa of elderly persons, especially when recurrent, this association will be found to exist very frequently. When called to a patient suffering from a sharp diarrhœa, there is little time and less opportunity to make a thorough diagnosis, especially as the urine is scanty and possibly albuminous without there being renal disease, and a careful investigation of the past history is all that can be relied upon. Often the materials so furnished are insufficient to prevent mischief. The following case is instructive in its sad history. Just on entering practice, I was called to a woman of forty-eight who was seized with purging. She had frequently had similar attacks, which had never been very amenable to treatment. As the woman was far from strong, the friends were very urgent about the necessity for early arrest of the discharge. The motions were watery and copious, and the amount of urine very small, and none could be secured for examination. After various combinations of astringents, my efforts were unhappily sufficiently vigorous to be successful. In thirty-six hours after the cessation of the alvine flux, uræmic coma came on, which terminated fatally. After a careful investigation of her history, it became certain that the unfortunate woman was the subject of chronic Bright's disease, and the discharge I had done so much to arrest was a compensatory action, and not a morbid process; in fact, I had brought to a close the only action almost by which the organism could have been preserved. Regret was unavailing, but the case brought forth fruit on an after day.

Some little time afterwards an opportunity was afforded of watching the play back and forward betwixt the kidneys and the bowels in an old man. During one paroxysm of renal engorgement, accompanied by free purgation, no water having been passed all day, I passed a catheter into the bladder to make certain that it was empty, as percussion had indicated. The bladder was empty. In a few hours the diarrhœa ceased, and he passed two pints of water. After repeated oscillations betwixt the kidneys and the bowels, the alvine flux each time being less and less, matters once more became normal. Arrest of the diarrhœa here by powerful astringents would probably have been fatal, as in the case just given.

A very striking case came under my care a year or two after this. An old woman, long the subject of renal disease, with a dilated heart, was seized with diarrhœa. The urinary secretion was scanty, and there was aching through the loins, &c. I declined to attempt to arrest the discharge, but gave the patient nutrient support, and applied large poultices, dusted with mustard, across the loins, as preferable to cupping ; and after the alvine flux might have fairly been supposed to have somewhat relieved the renal embarrassment, mild, non-irritating diuretics (potash with buchu) were prescribed. The domestic arrangements did not permit of any bath then procurable, but hot bottles were placed in the bed. For some days the case went on ; a brown, furred tongue, headache, and increasing stupor, a urinous odour of the breath, *ureous* vomiting, and a strong odour from the skin, vindicated the hypothesis of the uræmic nature of the diarrhœa. All hope was abandoned ; but after a little time the kidneys resumed their function, the diarrhœa ceased, and the urinous odour disappeared, and ultimately the old lady got well. This case contrasts very forcibly with the one first related.

In all cases where the diarrhœa takes its origin in uræmia and the process is a compensatory and conservative one, our line of treatment is not to attempt to arrest the diarrhœa until the ordinary channel is once more patent. If the diarrhœa is profuse and tending to exhaustion, it is well to act freely upon the skin, especially by external measures, the warm bath, &c. Opium in all its forms is strictly contra-indicated here, despite it well-known action on the skin. At most, all that may be adventured in the way of checking the action of the bowels is the administration of iron, and the pernitrate with nitrate of potash has furnished satisfactory results; while the attempts to restore the action of the kidneys by counter-irritation across the loins must be persisted in. During this time the patient must be supported by nutrient bland food; milk and seltzer-water, sago and arrowroot with milk, or a little beef-tea or mutton-broth, are the best measures, care being taken not to give beef-tea in such quantities as to add further to the load of nitrogenised waste. Alcohol in small quantities is not inadmissible. The treatment must be watchful, and eminently conservative. No sudden *coup de main* is to be essayed; but the case is be carefuly steered through its numerous difficulties, warily and skilfully indeed if a successful result is to be achieved.

Such is the line of treatment to be pursued in a large and most important class of alvine fluxes, especially met with in elderly persons. Whatever has been said here applies equally to the endemic diarrhœa, which is so commonly met with after scarlatina, when the kidneys are affected.

Finally, a word as to the external applications which may be resorted to in the treatment of diarrhœa. To relieve the pain produced by the peristaltic action, hot flannels wrung out of hot water, and sprinkled freely with laudanum or turpentine, or both, and applied across the abdomen, are very useful. Also enemata of starch and laudanum may be resorted to with advantage in severe cases, provided opium is not contra-indicated. When there is much tenesmus, a morphia suppository is a comfortable thing; and if there be any tendency to form hæmorrhoids, a suppository of morphia and gallic acid is indicated.

In the more persistent diarrhœas of infants, accompanied by much wasting, and especially in that form described by the old word lientery—where the food is passed almost unchanged—rubbing the child all over with olive oil once or twice daily is an excellent measure. By this means nutriment is absorbed, and the child is fed, so that the system is often enabled to recover itself, and the diarrhœa is ultimately subdued.

As to those forms of intestinal discharge known as colliquative, as depending upon tubercular disease, or enteric fever, they cannot be entered upon in this article. The two first depend upon the general condition, and their treatment is part of the general treatment—matters too wide to be considered here; while as to the third, it has been fully discussed in a recent number.

Reviews.

Diseases of the Kidney and Urinary Derangements. By W. HOWSHIP DICKINSON, M.D. Cantab., &c. Part I. Diabetes. 8vo. pp. 236. London: Longmans, Green, and Co.

On the Relation between Diabetes and Food. By ARTHUR SCOTT DONKIN, M.D., &c. 8vo. pp. 186. London: Smith, Elder, and Co.

ALTHOUGH both these works discuss the physiology of the liver in regard to glycogenesis, and the pathology of diabetes, as well as its medicinal and dietetic treatment, more or less completely, yet the pathology of the disease is the subject most fully treated of by Dr. Dickinson, and its dietetic treatment by Dr. Donkin. The title of Dr. Dickinson's work would, at first sight, lead one to think that he regards diabetes as a disease of the kidneys, but a single glance at the contents shows the author considers it to be a disease of the nervous system rather than of the kidneys or liver, although it is through the liver that the nervous derangement influences the amount of sugar in the blood, and it is through the kidneys that the excess of sugar is eliminated from the organism. According to him, "both forms of diabetes—the slight or early kind in which sugar is only transmitted, ceasing from the urine when sugar and starch are withdrawn from the food, and the more severe kind in which the sugar discharged is made in the body out of albumen or the like—may equally be described as failure of the liver to make glycogen, or the due proportion of glycogen, out of what should form it. In the first instance the liver loses its hold only of some of the superabounding glycogenic material of sugar and starch, but can deal normally with the smaller proportion presented in nitrogenous food. In the second case the glycogenic elements from both sources successfully elude transformation." He thus limits the causes of diabetes to one, viz., imperfect transformation of the sugar absorbed from the intestine into glycogen in the liver, and its consequent passage in an unchanged condition into the general circulation. In a somewhat too dogmatic way he discards two other possible causes of diabetes, increased transformation of glycogen into sugar in the liver, and diminished destruction of sugar in the tissues, although these are the very causes of glycosuria experimentally produced in animals. For it is when the liver is loaded with glycogen that puncture of the fourth ventricle produces the most marked glycosuria, which we can hardly attribute to any other cause than increased transformation of glycogen. When the liver is prevented from storing up this substance by administration of arsenic to the animal, such a puncture does not cause glycosuria at all, although we have no reason to believe that it does not cause hyperæmia just as usual, and should therefore induce glycosuria, if Dr. Dickinson were right in supposing this condition to be due only to the sugar passing unchanged from the intestines into the circulation. The glycosuria produced by woorara is sometimes entirely due to diminished destruction of sugar, for it occurs in animals which have been starved so long that no sugar whatever is being absorbed from the intestinal canal, and in which puncture of the fourth ventricle no longer produces glycosuria, all glycogen having disappeared from the liver.

The nervous lesions which induce glycosuria are fully and plainly described, and the importance of irritation rather than paralysis of the nervous centres prominently brought forward. Little was known regarding the source of such nervous irritation in cases of diabetes until Dr. Dickinson succeeded in discovering certain alterations occurring chiefly in the optic thalami, corpora striata, pons, medulla, and cerebellum, and also in the white matter of the convolutions. These alterations consist in excavations of the nervous tissue around the arteries, and are evidently exaggerations of the perivascular spaces. They sometimes contain degenerate remains of nerve tissue, remnants of blood-vessels or of extruded blood, and sometimes they are empty. They are probably formed by the red corpuscles migrating through the walls of the arteries and accumulating outside, thus leading to destruction of the nerve tissue around, while subsequently the whole contents of the cavity so produced are more or less completely absorbed. In rapidly fatal cases the cavities are larger, and sometimes contain a translucent gelatinous substance exhibiting under the microscope a delicate fibro-nucleated structure with granular or globular products of nerve disintegration and remains of vessels.

If Dr. Dickinson is right in supposing these changes to be the cause of diabetes—and it is by no means improbable that he is—he will have rendered great service to pathology, and although many more observations are necessary before we can accept his conclusions as certain, those that he has made are of very great interest. The changes in the liver, lungs, other organs, and the blood are described, and some new observations on glycosuria in insanity are recorded. In the next five chapters the author treats of the subjects, distribution, causes, general symptoms, course, duration, condition of the urine, treatment, and records of cases of diabetes mellitus. The following is a summary of the treatment:—"It is usually of paramount importance to reduce the production of sugar by diet, the degree of restriction varying with the nature of the case. Medicinally an early and mild case, one in which it is possible that the vascular disturbance may not have proceeded to extensive injury or destruction of tissue, may sometimes be beneficially treated by opium or codeia, but with such exceptions, and they are few, these drugs fail to check the course of disease however they may modify its leading symptoms, and are but too often injurious. In severe and advanced cases, where the nature of the cerebral lesions and the observed intractibility of the disease are alike discouraging, we can but contravene the symptoms—the inanition, the nervous and general depression, and the inactivity of the bowels. Strychnia, cod-liver oil, and iron are the drugs to which the highest value must be attached as directed towards this end." In the last three chapters the author takes up the subject of diabetes insipidus, which he thinks is probably due to nervous irritation in the cerebello-medullary region. He considers the treatment of the disease, so far as our present knowledge goes, to be rather compensatory than curative. "An unlimited allowance of water will make up for the chief loss; generous diet and medical restoratives will do the rest. And if the central lesion be not in itself dangerous, the patient may by such means be kept in fair health often for many years. Remedies designed to restrain the urinary secretion seldom fail to do harm. Opium and its alkaloids, perhaps in the greatest measure—they disturb the digestion, make the tongue coated, and, as I have more than once seen, cause diarrhœa, while there is little counterbalancing good in diminution of urine. Belladonna and bromide of potassium are equally useless, though somewhat less injurious. Valerian, lauded by no less an authority than Trousseau, has been ineffectual in my cases; and I may say the same of camphor, which has also been commended. Ergot as a vascular contracter, and cantharides as a homœopathic inspiration, were, the former without result, the latter productive of increased diuresis. Arsenic I have thought useful as a tonic, but less so than iron, strychnia, and cod-liver oil. These, together with country air, plentiful food, and drink without stint, will help the patient to withstand the exhausting effects of the disease until either it subsides under the natural influences of time and change, or reaches at last its inevitable close in uræmia or advancing cerebral disease."

This work not only contains much information, but the manner in which it is put is so clear and the divisions are so well arranged, that instead of hunting up one page and down another for the particular point we wish to ascertain, as is the case in most books, we can at once lay our finger on the particular lines we are in search of, an advantage which most readers will highly appreciate.

Dr. Donkin agrees with Dr. Dickinson in ascribing diabetes to impairment of the power of the liver to form glycogen, but differs entirely from him in regard to its nervous origin, and thinks that the dilatation of the hepatic vessels which irritation of the nerve-centres occasions would soon lead to grave structural change in the liver; apparently forgetting that although dilatation of vessels may accompany inflammation, yet the two conditions are as different as the red colour of a weather-beaten sailor's cheek and the flush of erysipelas. Particular attention is drawn to death by acetonæmia as one of the terminations of diabetes; the sugar, according to Cantani, undergoing conversion into acetone, which acts as a poison and produces coma and death. The chief point in this work is the skim-milk treatment recommended by the author, and the reasons he advances in support of it. These are chiefly based on the power of fats to produce sugar. This he thinks to be proved by the experiments of Salmon and by clinical observation of the condition of the urine of diabetics after the use of oil or fats. Instead of allowing patients suffering from diabetes to partake freely of fat, he completely prohibits it, and will not allow milk to be taken until the butter has been removed. As the gluten bread of Bouchardat is insipid, and bran bread when free from starch contains almost no nutriment, Mr. Van Abbott, of Princes Street, Cavendish Square, has at his suggestion combined the two, and produced a bread which is both agreeable and nutritious. Several cases are given in which the skim-milk treatment has been successful, and although it certainly is not uniformly so, the publication of this book may induce a good many to give it a further trial.

Clinic of the Month.

Popliteal Aneurism Cured by Pressure.—Staff-surgeon, Alex Turnbull, R.N., reports a case of popliteal aneurism, arising from a twist of the leg about three weeks previously. On examination, the contents of the sac were apparently still fluid, and the aneurismal bruit was clearly audible. Strict rest was enjoined, and Signorini's clamp tourniquet applied. A quarter of a grain of morphia was injected hypodermically, which procured a quiet night. On the following day, acute pain across the dorsum of the foot was felt, and there was some irritation experienced from the confinement and pressure, though this was only kept up intermittingly. After nine days, the pulsation was found to be feeble and easily arrested, and forcible flexion was attempted, but after an hour's treatment the aneurism was found to pulsate, and the patient requested the clamps might be substituted. On the fourteenth day of treatment, Signorini's and Lister's clamps were carefully applied, and all circulation arrested for seven hours, on removing the tourniquets no pulsation returned. An abscess subsequently formed, apparently in the internal saphenous vein, and had to be opened, after which the patient made an uninterruptedly good recovery. (*Lancet*, Sept. 4, 1875.)

The Duration of Bloodless Operations.—At a recent meeting of the fourth Congress of the German Surgical Society, Professor Langenbeck stated his opinion that it was of extreme importance to determine more accurately than has yet been done, how long a limb can be deprived of blood during a bloodless operation, without danger either to it or to the patient. He thought that the constriction could be kept up for a very long time without fear of gangrene if the patient could only overcome the disagreeable sensation which the bandage caused. Experiments upon animals, are however, particularly needed to determine the exact limit of safety. In long operations on the bones, for example in resections, it may be seen that the bloodlessness is not so complete in them as in the soft parts around, and that capillary bleeding occurs from them when not a drop of blood issues from the muscles. Professor Langenbeck continued, "I have recently kept up the constriction in excisions of the ankle-joint for an hour and a half without any ill effects. After this operation, I always find a plaster of Paris bandage the most comfortable and useful dressing; but till lately there was one great disadvantage attending its use, namely, that it became soaked with blood as soon as it was put on. In the last two cases on which I have operated, I have kept up the compression until the bandage was perfectly hard, and then cut large openings into it, so that the whole wound could be seen, and only then removed the constriction. The abundant hæmorrhage which now occurs from the vessels of the periosteum and the bone soon stops if the femoral artery is compressed for a short time; with a little care the blood can thus be kept from soaking into the bandage." (*Medical Times and Gazette*, July 31, 1875.)

Chloral in Sea-sickness.—Dr. Obet, who has been engaged for four years on vessels plying between Havre and New York, states that of all the numerous remedies which he has tried upon passengers suffering from sea-sickness, chloral, recently recommended by M. Giraldés, is by far the best. Bromide of potassium, which before the introduction of chloral, was the substance that did most good, is far too slow in its effects, and requires to be given in too large doses before any marked effect is produced, while the quantity of water necessary to enable it to be swallowed, forms a serious obstacle to its employment in this affection. Chloral, on the contrary, given in the form of syrup, in a dose of from 15 to 20 or 30 grains, procures a calm and tranquil sleep, on awakening from which the patient finds himself, if not completely cured, at least in a state of relative comfort. On the first day of the voyage this sleep should be at once secured by giving the patient 15 grains at a single dose, and the following days 20 or 30 grains may be given during the day, by taking a spoonful of the syrup every hour. As a general rule, under this plan, in two or three days the sick passengers have become accustomed to the sea, and are even able to take their meals at the table. The chloral to be useful, must be free from alteration and from humidity, if deliquescent, it may produce nervous irritation, sometimes of great violence. In pregnant women, several of whom the author has had in charge, this medicine also gives excellent results. Constipation, which is the usual accompaniment of sea voyages, should be most carefully avoided in the subjects of sea-sickness. Moral treatment, especially in the case of women, is of great consequence. Patients should be encouraged whenever possible to come on deck to inhale the fresh air and escape the abominable smells of the cabin. The subjects of sea-sickness usually complain of insatiable thirst, and many take large quantities of ice to relieve it, which is apt at the end of forty-eight hours to excite violent irritation of the stomach. Brandy or whisky is the favourite drink among the American passengers. Of all such liquids iced champagne is the best taken in table-spoonfuls every ten or fifteen minutes. He should not be restricted to fixed hours of meals, and although on the boats the table is served five times a day, the intervals are still too long for him. With respect to food the patient should be left much to his own taste—underdone and broiled meat being, however, preferable when he can eat such. (*Medical Times and Gazette*, July 31, 1875.)

Rheumatic Fever and its Treatment.—At the recent meeting of the British Medical Association at Edinburgh, Dr. James Johnston brought forward for consideration with regard to the causation of rheumatic fever, the non-conversion of starchy food into glucose in consequence of irritation from improper food or from exposure to cold and damp, and the conversion in the cæcum of the undigested starch into lactic acid, which being absorbed produced the phenomena of the disease. In regard to the treatment to be observed, he advocated the use of bicarbonate of soda, *given in enema*, instead of potash. In twenty cases so treated the temperature had gone down to below the normal state in the course of seven days. In a preceding paper, Dr. Russell Reynolds had shown how early relief had been obtained, not only from pain, but from the abnormal heat by the use of the tincture of the perchloride of iron, forty-four per cent. of first attacks being convalescent within the first week, whilst of those in their second, third, or fourth attacks, forty-two per cent. recovered within the same period. In the discussion that followed the reading of Dr. Johnston's paper, Dr. Long Fox, of Bristol, stated that he was more content with the practice of frequent blistering of the joints, than he was with anything else, especially when this was combined with the use of alkalies. Mr. Meacham, who could speak from experience, believed that carbonate of soda was one of the very best remedies we have in medicine for rheumatic fever or rheumatism. He would not have any objection to take two drachms of carbonate of soda at any time when he suspected an attack was approaching.—(*British Medical Journal*, Aug. 21, 1875.)

The Treatment of Scarlet Fever by the External Application of Cold Water.—Dr. J. E. Eddison reports two cases in which this method of treatment was adopted, and takes the opportunity of strongly advocating it. Scarlet fever, he says, seems to lend itself more than any other acute disease to this plan as the patients as a rule are young, and the beneficial results immediate and obvious. He does not believe that, if it be properly carried out, any danger arises from internal congestion, as nephritis. The most satisfactory way is to begin with the bath at 98° or 100°, and cool down gradually to about 70°. The hand is generally a good enough guide as to the water, and the appearance of the patient always indicates the improvement in his condition. (*Lancet*, Sept. 4, 1875.)

A New Mode of Treating certain Tumours of the Lymphatic Glands.—Dr. Messenger Bradley proposes the subcutaneous injection of iodine in certain cases of lymphatic tumours. These are, firstly, true hypertrophies of the lymphatic gland with or without a strumous diathesis. Secondly, strumous hypertrophies, *i.e.*, cases of cellular hyperplasia plus caseous deposit. And thirdly, hard non-infectious lymphomata, which present many points of resemblance to the first groups, and indeed are often only distinguishable in being multiple. Over all these it is a common practice to paint iodine. Dr. Bradley mentions a successful case of encapsulated tumour beneath the lower jaw, in which he experimented upon the effects of the injection of iodine. Since this period he has tried the same plan with success in many other cases. The best cases are those where a single cervical gland is hypertrophied in an otherwise healthy adult subject. Five or six injections of the simple tincture of iodine (five to ten minims at a time, according to the size of the tumour), at intervals of about four days, generally effect a cure. The earlier stages of strumous hypertrophies are also very successfully treated by this method, as are the small hard multiple lymphomata; but in the later stages of strumous disease of the cervical glands, where the tumour is broken down into a mass of caseous matter, and the neighbouring skin is blue and undermined no good results follow from the injection of iodine; and indeed these cases are best treated by a careful excision of the disorganized and degenerated glands. Dr. Bradley has also employed iodine injections in a large and hard fibroid bronchocele which had been treated unsuccessfully by the internal administration of the drug. (*Lancet*, Sept. 4, 1875.)

Tracheotomy in Croup.—Dr. George Buchanan after pointing out that the tendency of both croup and diphtheria is to obstruct the breathing and cause suffocation, proceeds to maintain that in many cases there is a stage in both diseases at which, when this tendency has become fully marked, it is of the highest importance to undertake the operation. Tracheotomy *per se*, though a difficult, is not a dangerous operation, and when either of the above diseases is likely to prove fatal by suffocation, and not from exhaustion, it becomes the duty of the medical attendant to perform tracheotomy. Cases, no doubt occur in which recovery has taken place from what appears to be a hopeless condition, but these are quite exceptional, and he thinks are far outnumbered by others in which delay, owing to repugnance to the operation and a hope that the symptoms will improve, have deprived the patient of that chance of life which the surgeon can offer. A contra-indication to the operation is when the suffocation depends not only on obstruction of the trachea, but also on effusion of false membrane or of the glutinous fluid which precedes it into the smaller bronchial tubes. Percussion and auscultation ought to assist in the diagnosis of this condition; and there are two signs which Dr. Buchanan thinks are valuable guides: one is the amount and loudness of the stridor, which is always great in proportion to the patency of the small tubes and obstruction in the trachea. But the most valuable test is a view of the naked chest. When the obstruction is in the trachea while the bronchial tubes are free, the respiratory movements are continued with exaggerated energy, but the chest will not respond to the muscular efforts. The result is that at each inspiration the flexible parts of the thoracic walls are drawn in with great force, the intercostal spaces are hollowed and the ensiform cartilage sucked back. But when the small bronchial tubes and perhaps the air cells are stopped with the viscid or membranous effusion the muscular efforts are more feeble, and the chest remains puffed out, and the whole aspect is that of a child thirsting for breath, but with the lungs already full, and themselves unfit for respiration. In this latter case Dr. Buchanan never operates; in the former he does so with every hope of success. He appends to his paper the results of 46 operations performed in diphtheria and croup, of which 17 cases were cured and 29 died. The average result is the same for both diseases, viz. that one child is saved out of every two and two-thirds operated on; and as the operation was always done when there seemed no hope of recovery otherwise, it may safely be stated that the lives of 17 children were saved by tracheotomy. (*British Medical Journal*, Sept. 4, 1875.)

Extracts from British and Foreign Journals.

Asarum Canadense as an Anthelmintic.—This remedy is not unfrequently used in the treatment of whooping-cough, and Dr. J. Schaffirt recommends it as an anthelmintic for ascarides. He mixes equal parts of the compound syrup of asarum and fluid extract of senna, and orders a dessert-spoonful for a child, or a table-spoonful for an adult, to be taken four times daily, and at bedtime a suppository, consisting of one or two drops of oleoresin of asarum made up with cacao butter. Three or four days' treatment usually effects a cure. The compound syrup is made by exhausting an ounce of the root with three ounces of alcohol and six of water in a percolator, and adding to the product a pound of sugar, ten grains of cochineal, twenty of carbonate of potassium, and half an ounce of ipecacuanha wine. The oleoresin is prepared by exhausting powdered asarum with sulphuric ether, and evaporating spontaneously. (*Philadelphia Med. Times*, v. 233.)

Syphilitic Ulceration of the Œsophagus—Diagnosis by Auscultation (Hamburger's Method).—Dr. F.W. Godon gives an account of a case occurring under his care, in which the patient had suffered from dysphagia for six weeks. He had suffered some fifteen years previously from constitutional syphilis. There was no evidence of lung-disease, and he had no cough and no expectoration. Examination of the throat and pharynx revealed nothing abnormal. The larynx was also found to be healthy, and there was no obstruction at the orifice of the œsophagus. Only fluids could be swallowed. The patient was made to drink a mouthful of water, and while he was swallowing it Dr. Godon auscultated the œsophagus by Hamburger's method (detailed in the *Lancet* for May 30, 1874). By this means it was found that the water on reaching a point opposite the fifth dorsal vertebra regurgitated with a loud splash; the fluid, however, was not thrown up into the mouth, but, at the expiration of a few seconds, passed down beyond the point of obstruction, and finally reached the stomach. By means of auscultation, a trickling or dropping could be distinctly heard during the passage of the liquid over the site of stricture, and the act of swallowing required some five minutes for its completion. Examination with a No. 8 bougie showed a tight stricture at the junction of the middle and lower thirds of the canal. The case was diagnosed as one of syphilitic ulceration of the mucous membrane of the œsophagus, and the patient was treated with iodide of potassium and ice, under which he rapidly improved. At the end of a month the disease had yielded so far that a No. 8 bougie could be passed without difficulty. Notwithstanding this, a certain amount of thickening had taken place, and the patient was directed to continue the iodide at least two months, and was discharged with a guarded prognosis. Dr. Godon lays great stress upon the advantages of Hamburger's method in the diagnosis of these obscure affections. (*Pacific Med. and Surg. Jour.*, February, 1875.)

Mustard Foot-bath in Urticaria.—A writer in the *Tribune Médicale*, March 7, recommends the use of the mustard foot-bath in cases of urticaria. In his own case, after trying innumerable remedies, he was about to abandon all hope of relief, when, one day, while suffering from a peculiarly aggravated attack of his old enemy, complicated by an excruciating headache, and hoping to relieve the latter, he plunged his feet into a mustard-bath. The relief was instantaneous, and it seemed as though the skin-disease had disappeared by a wave of the hand. Five other cases were subsequently treated by the writer, with similar relief. The treatment is, of course, understood to be only palliative, and has no influence in preventing recurrence of the disorder. (*Philadelphia Med. Times*, May 1st, 1875.)

Madeira as a Health Resort.—William Longman observes in his "Impressions of Madeira," that to invalids, for whom a bracing air is not required, the remarkable stability of the temperature is a great recommendation. To men in health the utter absence of occupation or amusement beyond that of visiting is wearisome. To those fond of scenery or of mountain exploration there are of course those additional sources of interest; but they are greatly lessened by the almost utter want of lodging accommodation. It is comparatively easy to get to the island, but not so easy to leave it. There are four different lines of steamers to Madeira. The first is the Union Steamship Company, the second is the African Steamship Company, the third is that of Messrs. Donald Currie and Co., of London, and the fourth line is that of Messrs. Lamport and Holt, whose vessels sail from Liverpool. It is possible to go and return to Madeira by way of Lisbon; but the Portuguese steamboats plying from that place to Funchal are to be carefully avoided. It need not be concealed, and cannot be denied, that the Portuguese officials do all they can to discourage visitors to Madeira; and the present governor of the island only declares that it would please him were the communications between Madeira and the rest of the world limited, as used to be the case, to one steamboat a month. Under such circumstances the want of roads and the want of accommodation for travellers—out of Funchal, which is admirably provided with these requirements—is not to be wondered at. (*Fraser's Magazine*, Aug. 1875.)

The Period of Maximum Death-rate.—Dr. J. Berens gives the following tables, which throw some light upon this subject, and are made up from the records of over one thousand deaths which have taken place in the Philadelphia Hospital during the past fifteen months. They are made to show the proportion of deaths which occurred during each period of one, two, three, four, six, and twelve hours in the twenty-four:—

Hour.	I.	II.	III.	IV.	V.	VI.	
	In each hour.	In each 2 hours.	In each 3 hours.	In each 4 hours.	In each 6 hours.	In each 12 hours.	Total.
Midnight.							
1 A.M.	40						
2 ,,	48	88					
3 ,,	39		127				
4 ,,	39	76		164			
5 ,,	59						
6 ,,	50	109	146		273		
7 ,,	82						
8 ,,	65	146		255			
9 ,,	52		198				
10 ,,	59	111					
11 ,,	38						
Noon.	46	84	143	195	341	614	
1 P.M.	45						
2 ,,	37	82					
3 ,,	39		121				
4 ,,	53	92		174			
5 ,,	32						
6 ,,	48	80	133		254		
7 ,,	47						
8 ,,	35	82		162			
9 ,,	34		116				
10 ,,	36	70					
11 ,,	28						
12 ,,	25	53	89	123	205	459	1073

From these tables it will be perceived that a marked difference appears between the number of deaths occurring at different periods of the day. Thus, a maximum death-rate of 82 is observed between 6 and 7 A.M., and a minimum of 25 between 11 and 12 P.M. Again, from midnight until 10 o'clock A.M. the general tendency is to increase, while from 10 A.M. throughout the remainder of the cycle there is a decrease. This becomes more marked proportionately as the numbers are grouped into sections comprising larger periods. The sudden rise in the rate, and the subsequent decline after this rise has attained its maximum, are well shown in columns III. and IV. To make a general summary, the death-rate suddenly rises at midnight, and continues to increase until about 9 A.M., when there follows a more or less regular decline, until the minimum is attained, a little before midnight. As to the underlying causes of these phenomena, they are still shrouded in obscurity. Among them, however, two things must occupy a prominent position,—nursing and the solar influence. The hour in the twenty-four which is marked by the highest death-rate corresponds almost exactly with the time when, taking the average of the year, the sun has been longest below the horizon of this latitude. After the average time when the sun has risen sufficiently above the horizon for its influence to be felt, there begins a tendency in the death-rate to decline until midnight. But this decline continues after the average time of sunset, and even grows more marked towards midnight. This latter point seems to militate against any theory of a solar influence. But the fact should be duly considered that the effects of the sun do not disappear with it, that the patient is generally placed under more favourable circumstances and composing influences which the night brings with it, such as nourishment, arrangement of bedding, and, above all, a cessation of the turmoil, the jars and excitements which inevitably, to a greater or less degree, involve even the best-regulated sick-rooms. Another matter of quite as much moment as the sun and all the attendant train of forces it evokes and sustains, is the undeniable fact that, however assiduous the attendants on the patient may have been through the night, the vigilance of the watchers relaxes as the day dawns, just at the time when it should be most on the alert. In the many cases when the question between life and death is an even one, this neglect is fatal, and the waning light expires, when a few drops of stimulus, or the mere rousing of the patient from what is often more lethargy than slumber to administer food or medicine at the appointed hour, would have decided the issue in favour of life. The results arrived at in this paper, meagre as they are, possess no mean significance. The field, though not a broad one, is important, and a few hours spent over hospital registers would amply repay those who have opportunity for such research.

If there is a period in the day when a larger demand is made on the energies of a patient the time should be known, that at that moment science may step in to stimulate flagging nature, and to bear part of the burden under which, with failing strength, she already begins to stagger. (*Philadelphia Med. Times*, April 3, 1875.)

Silicate of Potash in the Treatment of Erysipelas.—P. F. da Costa Alvarenza recommends that this fluid should be applied once or several times daily with a camel-hair brush to the affected part, either in the pure state or diluted in various proportions with water, as 1 to 4 or 1 to 11. The more concentrated the solution the more rapid the cure. The author has applied it in forty-eight cases at Lisbon and in seven at Rio Janeiro, and considers it to be the most effective as well as the most economical remedy that can be employed. According to Ullersperger it has been already employed to a considerable extent in Germany. Especially also as an injection in catarrh of the bladder. (*Centralblatt, f. d. Chirurgie,* No. 35, 1875.)

Treatment of Catarrh of the Urinary Organs accompanied by Ammoniacal Fermentation of the Urine.—According to Gosselin and Robin, urine in an ammoniacal condition is an active poison, and many of the bad symptoms which so frequently follow operations upon the urinary organs are due to its action. Ammoniacal urine is also very likely to lead to the formation of calculus. It is consequently of great importance to find a remedy which will cure or prevent this condition from being established, and this they consider they have discovered in benzoic acid, which when taken internally is excreted with the urine in the form of hippuric acid, as is the case also with some other substances, as cinnamic acid and the acids of the balsams of Tolu and Peru, and carries off in combination the ammonia of the decomposing urine. Their experiments show that from thirty to ninety grains of benzoic acid may be taken internally without any harm accruing. They begin with fifteen grains and quickly increase the dose to sixty grains per diem. As the benzoic acid is soluble with difficulty in water, one part requires 607 of cold water; they administer it in a pint of previously warmed solution of mucilage syrup or some aromatic water with the addition of a little syrup of cinnamon. In the course of from five to eight days, the beneficial effects of the benzoic acid are shown in the gradual diminution of the phosphate of lime, pus, blood, and fœtor of the urine. In all probability the hippuric acid proceeding from the benzoic exerts a directly curative action upon the inflamed vesical mucous membrane by retarding the decomposition of the urea. They recommend that in cases when a serious operation is about to be performed on the urinary organs, any ammoniacal alkalinity of the urine should be removed in this way. Dr. Fürbringer has lately communicated the details of four cases of ammoniacal fermentation of the urine occurring in chronic cystitis, in Morbus Brightii and paralysis of the spinal cord, in which salicylic acid, which is so nearly allied to the series of aromatic acids and agrees with them in their antiseptic properties, was administered internally. The daily dose amounted to from fifteen to thirty grains dissolved in a considerable quantity of water and made palatable with some aromatic oil. The urine had a smoky, grey, yellow, or greenish colour, possessed a strong alkaline reaction, had a nauseous odour, and deposited a sediment in which were seen under the microscope, pus and mucus corpuscles, numerous crystals of the triple phosphate and innumerable separate or associated bacteria in great part presenting lively movements. As early as the third or fourth day of the administration of the salicylic acid, the alkalescence and the putrid smell were considerably diminished, and the sediment became much smaller in amount. After the use of forty-five more grains of salicylic acid, the urine became pale yellow, rather hazy, and distinctly acid, without any disagreeable smell on being evacuated, and under the microscope a few corpuscles and pus in a little mucus were only visible in the small precipitate that formed on standing. In one case of cystitis doromica, the bladder was washed out with a one-fifth per cent. of a watery solution of salicylic acid by means of a double catheter, and the removal of the urinary sediment materially aided. (*Der praktische Arzt,* June 1875.)

Note on the External Use of Goa Powder.—This powder, named after the place of its fabrication, is a vegetable substance, that has not yet been submitted to accurate analysis, but the chief constituent of which has been shown by Attfield to be chrysophanic acid, in the proportion of about 80 to 84 per cent. The powder is only slightly soluble in hot water and almost insoluble in cold. The part insoluble in water dissolves easily in benzine. The external application of Goa powder for all kinds of cutaneous diseases is very common in India, and its consumption is considerable. M. Blanc, who has only employed it in cases of ringworm, herpes circinatus, has obtained excellent results. The affected parts were first moistened and then a small quantity of the powder was rubbed in twice a day. In from three to four days a perfect cure was effected. When it is applied to the face, M. Blanc recommends an alcoholic solution, and particular care should be taken that neither the powder nor the solution enters the eye. (*Journal de Thérapeutique,* 1875, No. 10.)

Therapeutic Uses of Polymnia Noedalia.—(Bear's foot). This plant is stated by Dr. J. W. Pruitt to have been under his observation for sixteen years. It belongs to the Compositæ, and appears to be rather a rare plant. His first use of this agent was externally in the form of an ointment in cases of enlarged spleen, in which it was so successful that he began a series of experiments with it; giving it internally in the form of tincture and syrup. He has thoroughly tested it in a variety of scrofulous, chronic, inflammatory and rheumatic diseases, with better results than he has obtained from any other agent. He considers it to be alterative, stimulant, anodyne, and subtonic. The indications for its use are dull sluggish circulation, sallowness, want of appetite, and a general atonic condition of the system. The tincture obtained from the maceration of 4 ounces of the root in a pint of spirit for two weeks may be given in doses of from 5 to 20 drops. The ointment was long used with great success in cases of white swelling by a Carolina woman. (*New Jersey Eclectic Med. and Surg. Journal*, vol ii., No. 1.)

The Nature of Paludal Miasm.—In a translation of some recent researches by Drs. Matteo Lanzi and G. Terrigi in the Charleston *Medical Journal* it is stated that Dr. Terrigi has satisfied himself that the organised beings of vegetable origin which *live* in stagnant water are never injurious, that these beings—the algæ in general—live upon the oxygen supplied to them and exhaled by them, but that when dying they sink, and the gas arising from their putrid fermentation is more or less soluble in water and ammonia. The marsh or lake is in itself less injurious when water is present, as the algæ which live in it by consuming carbonic acid and giving out oxygen improve the condition of the air. It will become injurious only when the water, begins to decrease by the evaporation of summer, and death of the plants taking place, fatal effects ensue. New lives, new organisms follow upon them, whence occur the parasitic microphytes, &c., which being lighter than their predecessors, can rise into the air with the gases emanating from the putrid fermentation and with the aqueous vapour. These gases, with the sphorules, can be collected with suitable apparatus upon plates of glass, &c., placed over the waters of marshes, and they may then be examined with the microscope. From experiments made in search of the miasma and the germs of fever, upon the algæ near Rome and upon the air in the Pontine marshes and at Ostia, it would appear that the injurious effects depend upon the presence of a special microphyte. Prof. Terrigi subjected animals to confinement where they were forced to breathe malarious emanations, and found the granules of cryptococci in the blood of the vena portæ, and in the cells of the enlarged liver and spleen which were softened, and which also contained pigment granules composed of cryptococci, apparently analogous to those found in the spleen of men dying of paludal cachexy. He strongly holds that paludal cachexia is a true disease, caused by fermentation. In other words, these granules in the form of cryptococci or of bacteria, but always under the form of fermentative products coming into contact with the blood, are the cause of the blood alteration, of the obstructions in the capillaries, acting as very minute emboli, but capable of further transit into the cellules (of the liver) which is the limit of their course. There remaining as parasites, they always maintain the same form which they preserve in multiplying—whence all the consequences and the features of the morbid phenomena. Prof. Lanzi suggests the identity of the splenico-hepatic black pigment (melanina) caused by paludal malaria with the ferment granules (either isolated or conglomerated) found in the degenerated cellules of paludal plants. Terrigi commenced his researches under the following points of view: 1st, to collect and examine microphytes from the waters and marshes giving out malaria; 2nd, to determine to what elevations in the atmosphere they could be carried; 3rd, to ascertain the action of chemical and disinfecting agents upon the life of the algæ either in arresting commencing putrid fermentation, thus impeding their life, or in the successive proliferation of their parasites; 4th, to institute experiments upon animals and to establish the anatomical and microscopical relation of the vascular viscera of those affected with melanæmia; 5th, to make analyses of the marshy waters and soils in order to ascertain what agents or treatment will be likely to ameliorate or deteriorate the condition of cultivated land. These, however, have only been partly carried out. He finds that putrid fermentation rapidly sets in in the suspected waters, the fermentescible body being an albuminoid substance, and the ferment consisting of vitreous bacteria, which made their appearance in enormous numbers, and which he is still engaged in examining. In regard to disinfectants, the most effective were lime, the chloride of lime, and chloralum. Quinine was found to kill all the infusoria in the course of twenty-four hours, but did not prevent the growth and development of algæ. He advises that a little sulphur should be burned in the interior of houses which are exposed to malaria. That a little lime should be thrown into the water, eight pounds sufficing for a ton. The algæ are thus destroyed, and no subsequent putrid fermentation occurs. He also advises the planting of the Eucalyptus globulus and especially of the Eucalyptus amygdalina. (*Charleston Medical Journal,* July 1875.)

Treatment of the Complications of Gonorrhœa: *Phymosis.*—When phymosis is simple, M. Ricord proceeds as follows :—The penis is allowed to assume its natural position without any traction being made upon the skin. A line is then drawn with ink on the prepuce, about two lines in front of the circular crest of the gland. A needle, the point of which is protected by a small pellet of wax is carefully introduced between the prepuce and the glans, and made to penetrate the prepuce from within outwards in the middle line and about one-twelfth of an inch in front of the circular line which has been traced. By this means the skin and the mucous membrane are fixed and rendered incapable of gliding over each other. Behind the needle the jaws of the fenestrated forceps are now placed, and the assistant is directed to screw them together lightly, and a bistoury is made to cut its way through the whole of the prepuce, between the needle and the forceps. The latter being removed the small vessels are twisted, and the two borders of the incision are brought into contact with the aid of serres-fines. After the operation the patient is directed to lie quiet, and an appropriate diet is ordered. Usually the wound unites by the first contraction, and recovery without deformity is complete by the fifteenth day. *Paraphymosis.*—In recent and moderately severe cases, reduction should be tried. When, however, it is of old standing and hard and when the swelling is considerable this will fail, and M. Ricord has recourse to the following proceeding :—The thick fold of tissue behind the glans is incised in the middle line; a straight bistoury is then passed under the border of the prepuce, and a cut made through it proportionate to the length of the gland; any small bridles that remain must be divided. Two cushions of swollen tissues sometimes remain on either side which should be removed. Rest and cold applications soon effect a cure. *Vegetations.*—Neither mercurial nor iodine treatment is required, but lotions of nitrate of silver may be applied night and morning. After each application the surface should be dried and covered with a powder composed of equal parts of savin, burnt-alum, and peroxide of iron. If this fail we may have recourse to caustic liquids, such as nitric, acetic, hydrochloric, or chromic acid; or especially the fluid acid nitrate of mercury, with which each vegetation should be separately touched. After a few days they die off, and the little ulcer that is left should be treated as a simple wound. When very large the vegetation may be partially removed with the knife or scissors, and the remainder touched with the carbo-sulphuric paste of M. Ricord. (*La France Médicale,* Année 91, No. 90.)

Opium Poisoning Treated by Sub-cutaneous Injection of Atropine.—Gopard Chunder Roy reports two cases in which this proceeding was successfully adopted. In both a sufficient amount of opium had been taken to prove fatal, and a sufficient time too had elapsed to allow of its being absorbed into the system, as nothing of it was found in the vomitings after the stomach had been thoroughly washed. In the first case three injections were given, each containing one sixteenth of a grain of atropia, and though the second injection produced some dilation of the pupil no decided improvement was observed, and hence it was not sufficient to neutralize the whole of the opium taken. Three-sixteenths of a grain of the salt, however, were found to neutralize about forty grains of opium. In the second case the symptoms were serious, and considering the tender age of the patient, 2½ years, and the quantity taken, probably ten grains, the result was at first doubtful; but in this case one-fifteenth of a grain of the salt saved the life of the patient. In the first instance the boy for petty spite had swallowed about forty grains of opium, and notwithstanding the employment of emetics, the symptoms progressively increased in intensity till they became extremely alarming. A solution of atropia (containing one-sixteenth of a grain in six minims, or nearly four grains to the ounce) was then prepared, and six minims were injected hypodermically into the left shoulder and this was followed by a cold shower-bath. The patient was then made to walk between two assistants, and as no marked improvement followed in half-an-hour another six minims were injected into the opposite shoulder. In half-an-hour more six minims more were injected into the neck, and he vomited some coffee that had been given to him. A few hours later he was well. In the second, the infant had a small quantity, one-hundredth of a grain of the atropine solution given by the stomach without effect, but it at once responded to an injection of one-sixteenth of a grain, and one hour after it had completely recovered. (*Indian Medical Gazette*, July 1, 1875.)

Treatment of Lymphosarcoma by Arsenic.—Dr. Tholen reports in the *Archives für klinische Chirurgie*, vol xvii., four cases of lymphosarcoma treated by arsenic in the manner previously employed by Billroth in two cases. The first case was of three months' duration. The tumor, originating from near the angle of the lower jaw, grew forwards towards the skin, and up on the side of the mouth, so as to interfere with the movements of the jaw. The diagnosis in this case was somewhat doubtful; a small piece removed suggested epithelial cancer. Treatment was begun at the end of May and continued until November. From three to five drops of Fowler's solution were given, on an average, daily, and about twelve injections of ten drops at a time were made into the tumour during the month. The tumour entirely disappeared, and two years later there was no return of the disease. The second case was a malignant lymphosarcoma of the cervical glands and tonsil. Lymphatic glands elsewhere enlarged. After five months of a similar treatment the neck had nearly recovered its normal contour. In the third case a large bunch of glands in the supra-clavicular and axillary region yielded to the arsenic at the end of two weeks, and subsequently disappeared entirely. In this case the patient died two months later, not, however, from this disease. In the fourth case the patient was seen too late to carry out the treatment. These cases the author thinks confirm, so far as they go, the views of the ancients in regard to the action of arsenic in malignant disease. This remedy would seem to be more effective in that form which more nearly resembles the inflammatory processes. It is to be used with the greatest caution; the condition of the tumour being carefully watched. The parenchymatous injections are, in the writer's opinion, more suited to carcinoma. Benign lymphatic tumours of the neck treated in this way were not altered. (*Boston Med. and Surgical Journal*, June 24, 1875.)

Employment of Chloral in Tetanus.—Chloral has been extensively employed in France during the past eighteen months in the treatment of tetanus. Previous to 1868 M. Verneuil had not seen a case of tetanus cured; since then he has employed chloral and has had five recoveries from this disease, a proportion of two-fifths. He has employed it in various ways, by the mouth and also by the rectum. He does not recommend subcutaneous injections, fearing local inflammations. Intra-venous injections should not be tried, he thinks, until other modes of administration have failed. Administered by the mouth it has been found to arrest convulsive action of the muscles if given in small and frequently repeated doses. M. Delsol reports in the *Gazette Hebdomadaire*, 1874, No. 31, four cases treated in this way, with three recoveries.

M. Pugliere reports in the *Lyon Médicale* two cases of tetanus treated by chloral. The first, a man aged fifty-five, was seen by him twelve hours after the first appearance of the disease. There had been no injury of any description. The trunk and inferior extremities were chiefly affected. Eight grammes of chloral were ordered to be taken in eight doses, at intervals at first of half an hour and subsequently at longer intervals. At the fifth dose the spasms ceased, and the following day the patient appeared quiet. Two hours later the symptoms returned, and the following day ten grammes were ordered in divided doses. The next day the patient was reported perfectly comfortable. The symptoms however returned, a quack was summoned, and the patient died. The second case was traumatic in its origin and the symptoms typical; one gramme of chloral ordered every half-hour; at the sixth dose the spasms had diminished greatly. The patient slept for three hours. Chloral was continued in greater or less quantity according to the symptoms. The patient was kept under the influence of chloral for three weeks, during which time he took one hundred and twenty grammes and recovered. M. Pugliere suggests that chloral administered in this manner acts better than either chloroform inhalations or intra-venous injections of chloral, as under these circumstances the chloroform expends its force chiefly upon the brain, whereas chloral which has been administered by the stomach after it reaches the circulation sets free chloroform, which thus acts upon the entire nervous system. M. Ribell reports in the *Bulletin et Mémoires de la Société de Chirurgie de Paris*, No, 2, a case of tetanus, following metrorrhagia with purpura hæmorrhagica and vaginal diphtheritis, treated successfully by hypodermic injections of chloral. This occurred two months after a confinement. On the fourth day tetanus appeared. One gramme of chloral was given by the mouth every half-hour. At the sixth dose the spasms ceased and the patient slept. The symptoms returned on awakening. The next two days the same treatment. On the following day two grammes were injected subcutaneously at the sides of the neck, at nine o'clock. At ten, injection repeated; also at eleven, twelve, one, and two o'clock. At the fifth injection the patient fell asleep and slept nine hours. The next day a slight return of symptoms, which were controlled by an injection. In all, fourteen grammes of chloral were injected.

M. Oré reports a case in the *Gazette Hebdomadaire*, March 13, 1874, treated successfully by intra-venous injections of chloral. Three injections of ten grammes, repeated at intervals of twenty-four hours, produced perfect quiet and relief from pain.

M. Lannelongue reports in the *Gazette des Hopitaux*, October 27, 1874, a case of traumatic tetanus, unsuccessfully treated by intra-venous injections of chloral. The autopsy revealed clots in the veins extending some distance above the points of injection, and in the right side of the heart, entering also into the pulmonary artery. The lungs were found strongly congested at the base and towards their posterior parts.

M. Cruveilhier reports a case in the same journal, April 10, 1874. A mechanic aged thirty-four entered hospital with a crushed hand. On the 18th, symptoms of spasms of muscles of face and throat, followed on the 20th, in spite of morphine given subcutaneously, by opisthotonos. On the 21st, nine grammes of chloral were prepared in ten grammes of water, and three grammes of chloral from this solution were injected into the vein of the elbow. In fifteen minutes the patient was asleep, and slept a few hours; three hours after awaking he was in the same condition as in the morning. On the 22d, five grammes injected, followed by several hours' asleep. 23d, three grammes. 24th, no improvement; five grammes injected through an opening in a vein at the elbow made by the lancet. 25th, enema of four grammes of chloral, with relief; the dose was repeated in the evening. 26th, the patient slept during the night. The report says much weakened, much thirst; nine grammes injected into the saphenous vein behind the malleolus. The patient felt a painful sensation all over the body at this moment, but immediately fell asleep and never awoke, dying the following day. At the autopsy, an abscess was found at the vein first punctured in the elbow. Some sloughs, and the wall of the vein gangrenous. All the other veins punctured were slightly thickened, the inner wall roughened, and contained clots. There was injection of the vessels about the cord and nervous centres. (*Boston Med. and Surgical Journal*, June 24, 1875.)

Conium Maculatum.—Dr. Charles Baker observes:—Conium was first brought to the notice of the profession by Dr. Stoerck in 1766. It took a high stand as a remedy of great value in scrofulous affections, in cancer, and in certain forms of cachexia, but soon fell into undeserved disrepute. The catalogue of diseases in which conium by itself may be regarded as a specific is indeed very limited, but when employed as an auxiliary or conjoined with other articles in a general plan of treatment, it is very large. Its value as a medicine is somewhat dependent upon the locality in which it grows, and as far as practicable it should be obtained from rich dry soil in an exposed situation. It is said to be almost destitute of medicinal virtue in Russia, and to be employed as an esculent by the peasantry. The leaves of the plant gathered in full bloom are the most active. But the whole plant—rejecting probably the larger stems—is generally employed in preparing the extract for commerce. The preparation used should not be an extract but an inspissated juice of a dark deep sea-green colour, and with the odour of the fresh plant. In its primary operation it is alterative and narcotic, and in its secondary it is very moderately laxative, and in certain conditions emmenagogue. It is also said to be aphrodisiac. As a subordinate part of its alterative action it is eminently cholagogue, and its action as a laxative probably depends on its power of promoting the secretion of bile. It is efficient in removing subacute inflammation of a scrofulous or arthritic character. As subordinate effects of its narcotic power, it allays morbid irritability, and irritation, and restlessness, but it is not an hypnotic. As an external application its scalded or bruised leaves will allay pain and resolve inflammation about inflamed joints or in irritable ulcers. When taken in deleterious doses it occasions anxiety about the epigastrium, faintness, vertigo, a sense of fulness, or pressure upon the orbits, and perhaps convulsions. The diseases for which it seems best applied as a narcotic are nervous toothache, neuralgia in its various forms, morbid thirst from relinquished habits of intemperance and whooping cough. In neuralgia it may be given in the form of pill, from two to four grains, repeated every two, three, or four hours, and it may be advantageously combined with arsenic, quinine, capsicum, or nitrate of silver. The last case of neuralgia treated by Dr. Baker was one of neuralgia of the tongue. The paroxysms were of short duration but of very frequent occurrence, two or three in the course of an hour, and the pain was unendurable. The patient was ordered three grains of the extract every two hours, but when during the following day he complained of vertigo and fulness about the head, Dr. Baker ordered him *two* grains every two or three hours, and succeeded in effecting a permanent cure. When it is desirable to use conium as an alterative and tonic, he uniformly employs the formula suggested by Prof. W. Tully of Yale College, and known as the syrupus conii et ferri sesquioxidi, which is thus made:—℞. ext. conii, ʒv., ferri sesquioxidi, ʒv. ad. ʒx., syrupi tolutain, ℥ii. ad. ℥iv., olei cinnamoni, olei gualtheria procumb. sing. ♏x., saccharii, ℥ii. ad. ℥iv., sp. vin. gall. ℥ii. ad. ℥viii., aquæ q.s. ut fiat mistura Oii. Of this a tablespoonful may be taken as a medium dose. This preparation is of great service in the different forms of dyspepsia, especially where there is reason to apprehend a torpid condition of the liver, or deficient or vitiated secretions in the alimentary canal. It is very useful in jaundice and in enlargement of the viscera following upon intermittents, as well as in strumous enlargement of the joints. Nothing is so effective as conium in soothing the torment of a cancerous ulcer. In dysmenorrhœa and amenorrhœa, and in chlorosis it is also of essential service. (*Cincinnati Medical News*, July, 1875.)

The Physiological Action of Hemlock and its Alkaloid.—In a paper on this subject by Dr. Lautenbach he confines his remarks almost exclusively to conia, as it represents the entire active principle of hemlock. In man the chief symptom produced when the alkaloid is given in doses just sufficient to impress the system decidedly is great muscular weakness, accompanied by giddiness, and occasionally by disorder of vision.

There is an intense desire to be quiet in a horizontal position, and owing to the heaviness of the eyelids which now occurs, the eyes are half closed, thus giving rise to the impression that the person is asleep. On attempting to walk, his feet feel as though they did not belong to him, and he falls, his knees refusing him support. The pulse is at first increased and afterwards decreased in frequency. Sooner or later, as the drug impresses the system, the pupils dilate. In some persons these symptoms are accompanied, rarely preceded, by symptoms of gastro-intestinal irritation, nausea, and rarely vomiting. If the dose be a poisonous one, we have, in addition to these symptoms, total failure of voluntary movements and convulsions occurring.

A study of the local action of the drug shows that it causes a progressive loss of functional power in every highly organised tissue with which it comes in contact. Nerve centres, peripheral nerves, muscles, both striated and non-striated, all succumb to it alike. If such contact be not continued too long, the tissue may recover, even after a total suppression of its functions—a proof that the alkaloid exerts no destructive caustic influence upon the tissues, such as Van Praag (*Reil's Journ. f. Pharmacodynamik* Heft i. s. 33) claims.

Conium is not a hypnotic, though it may cause the brain to become slightly clouded, but not to the extent to produce unconsciousness. In inducing complete repose of the muscular system, conia powerfully predisposes the brain for sleep, brings sleep within its reach, so to speak, but then leaves it.

If the imagination should happen to be dull, the brain may accept the invitation, and sleep occur.

Convulsions were early mentioned as symptoms of poisoning by hemlock. They are due to the action of the drug on the brain, not to irritation of the peripheral, motor, or sensory nerves, or spinal cord, nor to any action on the muscles.

Conia has a double action on the motor nervous system: a paralysing action on the peripheral ends of the efferent nerves, and a depressant action on the spinal motor tracts. In almost all cases the former occurs first and predominates, the spinal paralysis not occurring until the period of death; yet in a few instances the former does not occur, while the latter becomes more marked.

In ordinary therapeutic doses conia causes an increase in the number of heart-beats, which is followed by a decrease to the original number of pulsations. In poisonous, and even in very full therapeutic doses, the subsequent decrease is much greater than the primary increase.

The primary increase is due to paresis or paralysis of the pneumogastric centres. The subsequent diminution in the number of pulsations can be best explained by the occurrence of paresis of the vaso-motor nerves, due to commencing paralysis of the spinal cord.

The arterial pressure is decidedly lowered at first by conia, but very soon rises to far above its original height.

The first effect of a poisonous dose of conia is to cause an increase in the number of respiratory movements; this is followed by a diminution, and ultimately, if the dose be sufficiently large, by their complete cessation. The primary acceleration is due to an action on the pneumogastrics.

The failure in the respiratory movements advances *pari passu* with the paresis of the voluntary muscle, and it is very probably due to the same cause as the paresis of the voluntary muscles. In ordinary medicinal doses no gastro-intestinal symptoms occur in man; but conia sometimes causes vomiting in man and almost always in dogs, even when it is injected subcutaneously so as to have no local action on the stomach. It increases the saliva by stimulating the chorda tympani and other nerves concerned in the secretion of saliva.

Conia has no influence on the quantity or quality of the urine, nor has it any influence on the function of the skin. Its action on the biliary secretion has not yet been determined, but the circumstance that after death from conia poisoning the gall-bladder is always found distended with bile, renders it probable that it increases the flow of bile.

The voluntary muscles escape unscathed in conia poisoning, they continuing to respond to galvanism for a considerable period after death. The contractility of the muscles, however, may be destroyed by soaking in a concentrated solution of the alkaloid, but before such an effect can be produced in life the animal will have perished. On the non-striated muscular fibres the action of the drug is more pronounced. Geiger (*Mag. f. Pharm.* Bd. xxxv. s. 72, 256) states that it produces irritation of the muscular fibres of the diaphragm and alimentary canal; while in the experiments made by the writer, contractions of the muscular fibres of the intestinal canal and bladder occurred. When applied to the eye it causes contraction of the pupil by its local action upon it, but when absorbed into the system it always produces dilatation by its action on the nervous system. This dilatation is due to the paresis of the peripheral extremities of the motor oculi nerves, no longer enabling the sphincter of the iris to counteract the radiating fibres supplied by the more slowly paralysing sympathetic nerve. All investigators of conia have thus far almost totally ignored the action of this drug on temperature, and so far as I am aware, until this investigation no one has ever imagined that conia was so peculiar in its action as to be one of those drugs that decidedly increase the temperature of the animals poisoned. This increase occurs not only from poisonous doses, but also when ordinary therapeutic doses are given, *e.g.*, in the human subject one-seventh of a grain of conia caused the temperature to rise from 97° to 99½°. This increase of temperature lasts from three-fourths of an hour to an hour and a half, when the temperature gradually becomes normal.

The ancients believed that not only did it repress sexual desire, but that conium actually caused an atrophy of the testes and mammæ, which latter implies atrophy of the ovaries also. The utter falsity of this belief was shown in several cases of chorea occurring in girls about the age of puberty, in whom menstruation came on while they were under the physiological effects of conia.

While conia has no effect on natural sexual desire, morbid states are said to be much influenced by it. In proof of this Dr. Harley writes: "In those cases of exhaustion and irritability which arise from self-abuse, and in those cases of erotic tendency that arise from some obscure irritation of the lumbar portion of the cord, I have never known conia to fail to give relief." This relief is better explained, however, by referring it to the depressant action which the drug has on the spinal cord than to any possible action on the sexual organs.

That conia is absorbed is beyond question, and it probably undergoes no change in the system. (*Philadelphia Med. Times*, April 17, 1875.)

Comparative Value of Carbolic and Salicylic Acids in. Diabetes.—Ebstein and Müller continue (*Berliner Klin. Wochen* No. 5, 1875) their researches upon the action of carbolic acid in diabetes mellitus, and add some observations upon the use of salicylic acid in the same disease.

They believe that in certain cases of this disease, carbolic acid diminishes the proportion of sugar in the urine, together with the other diabetic symptoms. These cases are probably those which are connected with obesity, and where an anti-diabetic diet is apt to do good.

Carbolic acid is particularly useful in the lighter cases—those in which the Carlsbad cure does so much good. It does not, however, any more than this latter, protect against relapses; and indeed it fails in some cases when this does well.

Salicylic acid seems to be quite powerless for good in diabetes mellitus; although it is less disagreeable to take, yet many patients actually prefer carbolic acid. The latter may be administered in doses of one centigramme or more. It rarely disagrees; in one case occasional burning pain in the œsophagus was noticed. It in no way disturbs the stomach. (*Ibid.*)

Therapeutic uses of Lobelia.—In an article upon Lobelia M. Barrallier, of Toulon, states that the plants of this family used in medicine, are the *lobelia antisyphilitica*, the *lobelia ureus*, and the *lobelia inflata*. The part of the lobelia antisyphilitica employed is the root, which contains a fatty matter, a saccharine matter, malates of lime and potash, and a bitter matter, besides some salts. It had been used in Canada as a curative means against syphilis, before the arrival of the Europeans, but the observations of Havermann seem to show that it possesses little if any real value. The juice of the lobelia ureus has been used in intermittent fevers, but its aridity and the gastro-intestinal irritation it is apt to produce have caused it to fall into disrepute. The lobelia inflata has long been employed against asthma. It contains an odorous principle, an alkaloid named lobeline, an acid, the lobelic; gum; a resinous matter, chlorophyll, a fixed oil, woody tissue, and salts. M. Barrallier has experimented with the United States pharmacopœia tincture in doses varying from five to sixty drops, and the phenomena observed may be divided into two categories, the specific and the accidental. Amongst the former are, 1. Dysphagia; 2. Laryngeal and thoracic constriction, with interference with respiration; 3. Irregularity of the movements of the heart, with diminished frequency of pulse; 4. Cerebral disturbance, cephalalgia, tendency to sleep, and dilatation of the pupils. Amongst the latter are muscular fatigue, disorder of the digestive functions, as nausea, vomiting, diarrhœa, &c.; and uterine contractions. The physiological effects of the lobelia inflata show that the pneumogastric and spinal accessory nerves are especially affected. This is demonstrated by the disturbances noted in phonation, respiration and circulation; the cerebral disturbances are no doubt the results of the effects produced upon the lungs and heart; the disorders of the digestive functions are explained by the influence exerted on the biliary secretion by the numerous filaments sent to the loins by the vagus, and by the connection of the right vagus with the internal extremity of the semilunar ganglion of this side; contributing thus to the formation of the solar flexus it comes into relation with the great sympathetic, the numerous branches of which are distributed to the intestines. Given in large doses lobelia inflata acts as a poison, its effects being characterised by intense headache, by nausea, vomiting, great anxiety at the præcordia, with extreme dyspnœa, caused by want of power in the respiratory muscles; dysphagia is well marked; the voice becomes raucous, the pulse is small and irregular, the muscular debility is general, the sleep heavy, but interrupted by hallucinations, and a feeling of pricking is sometimes felt over the surface of the skin, while acute pain is felt in the urethra during micturition. *Lobeline* has a violent and rapid action, and its effects resemble those of nicotine; a grain of lobeline having been introduced by Proctor into the stomach of a cat, the animal immediately lost its muscular power and remained motionless for an hour; the pupils were dilated, but it had neither vomiting nor diarrhœa; recovery took place in about fifteen hours. The leaves of the lobelia inflata were originally used by the inhabitants of North America as an emetic, but after the arrival of the Europeans its actions were more elaborately tested, and as it was found that its emetic action was both painful and protracted, nausea remaining for a considerable period, it fell into almost complete oblivion. Subsequently renewed observations having shown that it was efficacious in certain spasmodic states of the organs of respiration, it again came into use as a remedy against asthma and dyspnœa. The physicians of the United States prescribe it in combination with iodide of potassium and with strychnia. M. Barrallier was himself the first to introduce it into France. He states that he has found it serviceable in abbreviating attacks of asthma, and in rendering them less violent. He has also employed it in the later periods of pulmonary phthisis, the victims of which often suffer from attacks of dyspnœa, especially at night, and though sometimes quite inoperative, at others it acts admirably as a calmative. Dyspnœa again is a frequent symptom of chronic pulmonary catarrh, especially of that form which Larunse termed dry catarrh. This condition is often materially alleviated by the employment of the tincture. It is not unusual to meet with persistent catarrh at the close of pneumonia when convalescence is established. The respiratory movements are shallow and frequent; the tincture of lobelia is very useful in removing this condition. M. Barrallier has frequently observed dyspnœa in the anæmic and chlorotic, and lobelia is sometimes serviceable in relieving it, especially when it is associated with palpitation. Again, severe dyspnœa sometimes occurs in that form of cholera named the tetanic or convulsive, and improvement of a very marked kind followed the use of lobelia in two-thirds of the cases. The external use of the infusion for relieving the pain of wounds has been recommended in Germany and in this country. Livesey has suggested the use of lobelia injections in cases of rigidity of the neck of the uterus, and lastly Eberle has used glysters of lobelia with great success in strangulated hernia. (*Nouveau Dictionaire de Médecine,* vol. xx.)

Notes and Queries.

New Inventions in Surgical Mechanism.—Mr. Richard Davy has published a little pamphlet in which he has collected and figured various instruments, an account of which he has either given in detail in the medical journals or exhibited at the Medical Society of London. They are as follows:—1. A needle, with concealed reel tramway and wheel for excision or intrusion of wire, and a remissal collar for fixing any shaped tubular or plain needle. 2. Waterproof padding, which is fluted with perforations in the valleculæ 3. Retention drainage wires and naslate knife. 4. Minor surgery clamp. 5. Talifis instruments. 6. A sharp or blunt-pointed anatomy knife. 7. Retention catheter. 8. Modified Holl's stricture dilator. 9. Probe-pointed catheter for pennial section. 10. New canula for puncture of rectum. 11. New sound for opening an empty bladder per rectum. 12. Landing-net for calculi. 13. Cautry iron and handle. 14. Post-mortem skull tractor, drill, and saw; and, lastly, a new form of bone forceps. Most of these are ingenious, and several will probably come into general use.

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De la Résection Temporaire des Os de la Face. Par Alfred Goguel. 8vo. pp. 88. 2*s.* London and Paris: Baillière.

Histoire Abrégée des Sondes et des Bougies Urethro-Vésicales. Par J. J. Cazenave. 8vo. pp. 51. 2*s.* London and Paris: Baillière.

. Any of the foreign works may be procured on application to Messrs. DULAU, of Soho Square, W.C.;—WILLIAMS and NORGATE, of Henrietta Street, Covent Garden, W.C.;—or BAILLIÈRE, of King William street, Charing Cross.

Department of Public Health.

THE INFLUENCE OF THE WEATHER ON THE PUBLIC HEALTH.

If the more familiar things were the best understood, our knowledge of the influence of the weather in promoting or preventing sickness ought to be supreme. Commonness has, however, no necessary connection with comprehension, and the part which the weather plays in determining sickness, and especially particular kinds of sickness, is still one of the most complex and least clearly understood questions of science. There are numerous beliefs on this subject, some proverbial, some popular, some *quasi*-scientific ; but of the scientific study of the subject we have hardly yet got beyond the first tentative efforts, and the catarrhal nose is still a stumbling-block to the most learned physician. Nor is this to be wondered at. Here progress is essentially dependent upon an accurate registration of kinds of sickness and causes of death in conjunction with meteorological phenomena; but of sickness, none but limited local records are to be found ; of the causes of death, only now is it becoming possible in a few localities to subject them to such analysis in view of this question as is to be desired; and whether as to sickness or as to causes of death, registration as yet hardly admits of that precision which is obtainable in meteorological records. It is no reproach to medicine that in these matters she can but supply imperfect materials for research. The registration of sickness and of causes of death are questions of public polity, of which the former has not yet been dealt with by the Legislature, and the latter has been provided for with regard not so much to the scientific importance attaching to an accurate registration, as with reference rather to questions of social administration. Add the sources of fallacy which necessarily attach to a system of observation (so to speak of registration) where the observers have to be taken indiscriminately, and the registrars have neither the means nor, as a rule, the knowledge for verifying the facts observed, and it will be understood how in this matter medicine must lag behind the sciences which can be pursued by selected means and selected observers. In questions such as these, involved in the study of the weather in relation to sickness, the progress of medicine is largely limited by the progress of general knowledge among the people. For the materials upon which she must work to achieve such results as she desires cannot be obtained without the concurrence of the people at large. If private effort had availed for this purpose, our knowledge of the weather relations of disease would no doubt have advanced step by step with our knowledge of meteorology; but such effort, to be effective, must be supplemented by, or itself be supplementary to, efforts made by the community or State. The eloquent observations of Professor Balfour Stewart, in his address to the section of Mathematical and Physical Science at the recent meeting of the British Association at Bristol on the part of the State in scientific research, although limited to the physical sciences, would apply especially to an order of the kind now under consideration. "Important classes of phenomena relating to physical meteorology, and to terrestrial and astronomical physics," say the recent Royal Commission on the Advancement of Science, "require observations of such a character that they cannot be advantageously carried on otherwise than under the direction of Government," &c. If this is to be said of these phenomena, now much more may it be said of the phenomena of disease or death in relation to meteorological phenomena? Here progress is well nigh impossible except under Government direction. This is crudely and grudgingly admitted in the organisation of the Registrar-General's Department and the Medical Department of the Local Government Board; but the scientific element of these departments is primarily designed, in the one case, to deal with the vital statistics of the kingdom, in their economic relations; in the other, with the sanitary administration in strict relationship to the exigencies of general and local government. Such scientific work as Dr. William Farr on the one hand, and Mr. John Simon on the other, beyond this restricted departmental scope, have imparted into their labours, has been admitted grudgingly, not unfrequently questioned sometimes in Parliament, and is too commonly held to be supererogatory. Throughout Dr. William Farr has striven to give the reports of the Registrar-General a value far beyond the immediate purposes for which they are applied, making them a mine for the vital statistician. So likewise Mr. Simon, in the scientific reports of his department, has at all times had in view that its work and the sanitary work of the Government should not be limited in its scope by the results of private research—that, in fact Government should contribute to the research which it has to apply in those fields where private effort must work at disadvantage. But more than this is needed. Obviously in reference to the question before us, it should be a function of Dr. William Farr's department to report on the relation of the fatal diseases he registers to the meteorological phenomena he reports; and his department should be strengthened for this and analogous purposes. So, also, Mr. Simon's department, while engaged, on the one hand, in studying the intimate pathology of the more fatal diseases, should be enabled to enter upon a comprehensive study of the comparative sickness of the different districts of the kingdom.

These things will come, doubtless, in the fulness of time; but meanwhile private research, undeterred by the difficulties peculiar to limited data, does not hesitate to lead the way. A notable instance of this is given in the last published part of the *Journal of the Scottish Meteorological Society* (July 1874–July 1875). This Society has long distinguished itself by the attention it has bestowed upon Medico-Climatological matters; and in the number of its Journal referred to, it publishes a paper of remarkable interest by Mr. Alexander Buchan, its Meteorological Secretary, and Dr. Alexander Mitchell, the Chairman of the Medico-Climatological Committee, on the *Influence of Weather on Mortality from Different Diseases and at Different Ages.* This paper contains an analysis of the registered causes of death in London with reference to meteorological changes during the thirty years, 1845-74. The method followed is by showing diagramatically the average death-rate of each week for the different diseases and classes of diseases. The curves thus obtained are, in a number of instances, to be regarded as true *constants* of the disease to which they refer. Such *constants*, the authors observe, London alone, with its enormous concentrated population, could give.

In the space at our disposal, it is impossible to enter into any detailed account of the results obtained in this elaborate paper; and we must content ourselves by stating generally what is to be found in it, and with referring to one or two points. The authors begin by discussing the distribution of deaths from different diseases over the weeks of the year, dealing with each disease or cause of death separately, observing the order in which these causes of death appear in the returns of the Registrar-General, and exhibiting graphically, by means of a curve, the results which have been arrived at in the case of each disease. The calculations extend to every cause of death which appears in the returns of the Registrar-General, and the exact figures from which the curves are constructed are given in Tables.

After describing the character of each curve separately, they proceed to draw together and discuss in groups those curves which show similarities, describing the character of the weather which coincides with their maxima and minima. Cases, also, in which the disparity is of the nature of a reverse, are contrasted; and attention is drawn to those curves which have either a close direct or a close inverse relation to some particular element of weather, such as temperature or humidity.

In the foregoing divisions, the relation of weather to deaths from different diseases is discussed without regard to age. But in a subsequent division the authors endeavour to show that persons of different ages are amenable to the influence of weather in a varying manner; and here they educe some interesting results. They also endeavour to ascertain whether the two sexes are affected by the weather in the same manner and degree or not. This part of the inquiry, however, could only be partially pursued, as the Registrar-General's returns do not furnish the requisite data; but it is shown that the two sexes are not always affected either in an identical manner or in the same degree.

In dealing with their subject, the authors are careful to point out that their object is not to show what diseases are most fatal, but in what manner the progress of different diseases is influenced by weather. Further, they observe that, while their results are true as to London, they must not be regarded as true of other places. For further inquiries have already made it evident that in different places deaths from different diseases exhibit very different degrees of sensitiveness to weather; and also that differences of climates—as, for example, between London and Aberdeen—may be sufficient to cause radical differences in some of the curves.

In discussing the curves of the different diseases, it is to be regretted that the authors did not consult such materials as exist respecting the relations of weather to sickness in parts of London, especially Dr. Ballard's papers on the subject, and particularly the paper by that gentleman published in the Eleventh Report of the Medical Officer of the Privy Council. The relations of the curves of the various kinds of sickness discussed by Dr. Ballard to the mortality from the second kinds as exhibited by Mr. Buchan and Dr. Mitchell are of great interest. They correspond, for the most part, in form, the mortality curves, of course, reaching their maxima and minima a short time after the maxima and minima of the sickness curves. Dr. Ballard's more detailed examination of the meteorological data in relation to the various diseases he discusses, should be read in conjunction with Mr. Buchan's and Dr. Mitchell's paper. These gentlemen comment upon the constancy of the seasonal influence indicated by the small-pox curve, a disease, they remark, which is "generally thought to have no steady relation to seasons." The relationship, it may be remarked here, is brought out with great clearness by Dr. Ballard, and his observations on the subject, as well as on the seasonal relations of other zymotic diseases, should be consulted at a time when the recent re-discovery of such relationship in India is believed by the discoverers to revolutionise the doctrines of the modern schools of physic as to the mode of dissemination of the contagious diseases!

In the meteorological section of the paper, the authors, regarding climate as mainly determined by temperature and moisture, divide the year into six periods, each characterised as follows:—(1) Dampness and cold (fourth week of October to third week of December); (2) cold (fourth week of December to third week of February): (3) dryness and cold (fourth week of February to second week of April); (4) dryness and warmth (third week of April to fourth week of June); (5) heat (fifth week of June to fourth week of August); (6) dampness and warmth (first week of September to third week of October). Under each of these periods they arrange and discuss, in six sections, with reference to the meteorological phenomena, the causes of the deaths occurring during it, as shown by the mortality, namely — those showing an increase from minimum, those showing a rapid increase, those showing a large excess above average, those showing a decrease from maximum, those showing rapid decrease, and finally, those showing a deficiency from average.

Of the many facts of interest elicited in the discussion of the data, none perhaps will attract so much attention as those which relate to infantile mortality and the mortality of young children. The curve of mortality of both sexes, at all ages and from all causes, is characterised by two principal maxima, one occurring in the summer months of July and August, the other in the winter months of November and December. The summer maximum is determined by the prevalence of fatal bowel complaints; the winter maximum, by the prevalence of fatal diseases of the respiratory organs. Now the data show that in London the vast increase of the mortality from bowel complaints which occurs during the hottest weeks of the year is almost wholly among infants under one year of age; while the deaths registered from pneumonia among children five years of age during the winter months largely determines the excess of mortality of that period. The method of stating the facts, here imperfectly summarised, brings into striking prominence the pre-eminently important part which infantile mortality and the mortality of young children plays in the death-records of the metropolis. Mr. Buchan and Dr. Mitchell have done a valuable service by emphasising this fact, so to speak, and by indicating the lines of inquiry which it should suggest. Mr. Buchan, moreover, in an examination of the mortality of the large towns of the British Islands in relation to weather, published in the number of *Nature* for the 5th of August 1875, has recurred to the fact in reference to diarrhœa. His observations, however, miss some part of their value from want of comparison with cognate inquiries by English workers, especially the official inquiries commenced in 1858 under Mr. John Simon, and based upon Dr. Headlam Greenhow's report on the comparative mortality from certain diseases at various ages of different districts in England. A knowledge of these inquiries, continued to the present time, is necessary, in order to a just appreciation of the value of Mr. Buchan's and Dr. Mitchell's labours on the one hand, and for the furtherance of such additional inquiries as they suggest.

The papers of Mr. Buchan and Dr. Mitchell, to which we have referred, constitute but an instalment of the work they have in hand on the subject to which they relate. We shall look with great interest for the results of their further labours; and we trust when they have brought them to a close that they, or the Society they represent, will see the desirability of publishing the series of papers as an independent work.

SANITARY LEGISLATION DURING THE PAST SESSION.

The last Session of Parliament will be memorable in sanitary legislation for the passing of "The Artizans' and Labourers' Dwellings Improvement Act 1875," and "The Public Health Act 1875." The former Act enables towns of a certain magnitude in England and Ireland, without exception, to deal under a general Act with a grave and common evil, which hitherto has only been successfully dealt with by local Acts obtained by a few particular towns for the purpose. The latter Act consolidates existing general sanitary statutes, and substitutes one compendious statute for the numerous statutes which have hitherto vexed and perplexed sanitary authorities and their officers and the public generally.

"The Artizans' and Labourers' Dwellings Improvement Act 1875" is, having regard to its importance, a comparatively short Act of thirty-one sections, with schedule of certain details. Its full title is "An Act for Facilitating the Improvement of the Dwellings of the Working Classes in Large Towns [29th June, 1875]," and the preamble sets forth that, whereas various portions of many cities and boroughs are so built, and the buildings thereon are so densely inhabited, as to be highly injurious to the moral and physical welfare of the inhabitants; and whereas there are in such portions of cities and boroughs as aforesaid a great number of houses, courts, and alleys which, by reason of the want of light, air, ventilation, or of proper conveniences, or from other causes, are unfit for human habitation, and fevers and diseases are constantly generated there, causing death and loss of health, not only in the courts and alleys, but also in other parts of such cities and boroughs; and whereas it often happens that owing to the above circumstances, and to the fact that such houses, courts, and alleys are the property of several owners, it is not in the power of any one owner to make such alterations as are necessary for the public health; and whereas it is necessary for the public health that many of such houses, courts, and alleys should be pulled down, and such portions of the said cities and boroughs should be reconstructed; and whereas in connection with the reconstruction of those portions of such cities and boroughs it is expedient that provision be made for dwellings for the working class who may be displaced in consequence thereof: it is enacted that in the City of London, the Commissioners of Sewers; in the Metropolis, the Metropolitan Board of Works, and, in urban sanitary districts of England and Ireland having populations of 25,000 and upwards, the urban sanitary authorities may purchase compulsorily such unwholesome portions and effect requisite improvements therein.

Conditions of this purchase are that an official representation of the unhealthiness of houses to be purchased must first have been made to the authority, and that thereon the authority, if satisfied with the accuracy of the representation, shall prepare a scheme of improvement. The official representation must be made by the medical officer of health, or in the Metropolis a medical officer or medical officers appointed for the purpose; and it must show that the houses, courts, or alleys to which it refers are unfit for habitation, or that diseases indicating a generally low condition of health amongst the population have been from time to time prevalent in a certain area within the jurisdiction of the local authority, and that such prevalence may naturally be attributed to the closeness, narrowness, and bad arrangement or the bad condition of the streets and houses or groups of houses within such area, or to the want of light, air, ventilation, or proper conveniences, or to any other sanitary defects, or to one or more of such causes, and that the evils connected with such houses, courts, or alleys, and the sanitary defects in such area cannot be effectually remedied otherwise than by an improvement scheme for the rearrangement and reconstruction of the streets and houses within such area, or of some of each streets or houses. The scheme for improvement must provide in detail, giving maps and estimates, for the rearrangement and reconstruction contemplated, and especially for the accommodation of at least as many persons of the working class as may be displaced in the area with respect to which the scheme is proposed, in suitable dwellings, with proper sanitary arrangements; and these dwellings, unless there are any special reasons to the contrary, are to be situate within the limits of the same area.

Improvement schemes have to be confirmed, after due local inquiry, in the City of London and the Metropolis, by the Secretary of State for the Home Department; and in urban sanitary districts by the Local Government Board (styled in the Act the confirming authorities), before they can be put in operation. For the rest, the Act makes provisions relative to its operation for dealing with recalcitrant sanitary authorities and medical officers of health, and for the necessary arrangement for notices to owners of condemned property, manner of purchase, sale of property or its profitable utilization by the authority, arbitration, and the various difficulties incident to a compulsory transference of property.

"The Public Health Act, 1875," or, as the detailed title has it, the "Act for consolidating and amending the Acts relating to Public Health in England [11th August, 1875]," reflects great credit upon the Legal Department of the Local Government Board, for we presume that this Department will have been responsible for its drafting. Although an Act of 343 sections with sundry schedules may seem formidable, such is by no means the case, having regard to what the Act is intended to compass and what it includes. The Act, as printed, is eminently handy, and its arrangement is excellent. The amendments introduced into the Act are few, but as it must be studied in its entirety by all who are concerned in the administration of Sanitary Law, we shall content ourselves with describing the general arrangement.

The Act is divided into eleven parts. The first part is preliminary, and cites the short title, limits the operation of the Act to England, with the exception of the metropolis, states its principal divisions, and gives necessary definitions. The second part contains the provisions regarding the Authorities for the Executive of the Act, defining the constitution of districts and authorities. The third and bulkiest part of the Act relates to Sanitary Provisions, and includes no less than 131 sections. This part has several divisions and subdivisions. First come the provisions relating to Sewage and Drainage, arranged with reference to the regulations as to sewers and drains, the disposal of sewage, and sewage works outside a district. Then come the provisions respecting privies and water-closets, followed by those referring to scavenging and cleansing, arranged with reference, first, as to streets and houses, and, next, as to offensive ditches and collections of matter. The fourth division of the part deals with water-supply, giving in one subdivision the powers of local authorities in relation to supply of water, and in another the provisions for the protection of water. After water-supply come the provisions relating to the regulations of Cellar Dwellings and Lodging Houses, and these are followed by the provisions regarding Nuisances. Next come the provisions as to Offensive Trades and as to Unsound Meat; then as to Infectious Diseases and Hospitals. Afterwards are given the provisions relating to the Prevention of Epidemic Diseaes, and the part closes with the provisions as to Mortuaries. The fourth part includes what are termed Local Government Provisions, namely, the provisions regarding highways, the regulation of streets and buildings, lighting streets, public pleasure grounds, markets, and slaughter-houses, and police regulations. The fifth part is devoted to General Provisions regarding contracts, purchase of lands, arbitration, bye-laws, and officers, and conduct of business of local authorities. The sixth part relates to Rating and Borrowing powers, including the expenses of urban authorities and urban rates, the expenses of rural sanitary authorities, and audit. The seventh part contains the provisions concerning Legal Proceedings. The eighth part deals with alteration of areas and union of districts, and with past sanitary authorities. The ninth part refers to the powers of the Local Government Board in directing inquiries, issuing provisional orders, enforcing the performance of duty by defaulting local authorities, and the repeal and alteration of Local Acts. The tenth part contains certain miscellaneous and temporary provisions. The eleventh part contains saving clauses and the provision repealing Acts.

This brief summary will indicate how greatly an acquaintance with existing general sanitary law must be facilitated by this important Act. As a mere mechanical matter, the gain of having the provisions of the previous numerous Sanitary Acts brought within the compass of a single Act cannot well be underrated. As a starting-point for more finished and comprehensive—or, in other words, less blundering and confused—legislation, the great importance of the Public Health Act (1875) must be obvious. It was in this respect that the Act was submitted to and accepted by Parliament, and it will be advantageous in proportion as it is steadily regarded from this point of view.

THE PRACTITIONER.

NOVEMBER, 1875.

Original Communications.

ON THE TREATMENT OF SPASMODIC ASTHMA BY THE SUBCUTANEOUS INJECTION OF MORPHIA.

BY J. KEITH ANDERSON, M.D.

In the treatment of a paroxysm of spasmodic asthma by any of the various methods usually employed, an element of uncertainty is common to all. The means which are effectual in one case are not necessarily so in another, nor even in a subsequent attack in the same person. Moreover, in some instances relief is only temporary, and the spasm returns as soon as the immediate effects of the remedy begin to pass away. In these circumstances, the suggestion of a speedy and effectual remedy is desirable.

Some six months ago, in a case of spasmodic asthma of long standing, in which the usual anti-spasmodic and depressant remedies had proved unreliable, I ventured to make trial of the subcutaneous injection of morphia. The results were so extremely satisfactory, that I have applied the same treatment to the cases which have since then come under my care. The plan is so simple and so obvious, that I cannot but think that it must have occurred to others beside myself. Having, however, found no mention of it in the text-books or elsewhere, I am emboldened to present it to the consideration of the profession.

I have now used the treatment on twelve occasions, and the result in all cases has been a complete and perfect relief from the embarrassment of the respiration. The rapidity with which the distressing symptoms are controlled is very striking. In from five to ten minutes after the injection has been administered, the patient finds himself well, *per saltum*. There is no perceptible interval between the agony of breathlessness of one moment and the perfect calm and rest of the next. I have seen a man who had been labouring to speak—jerking out his words syllable by syllable—suddenly rise to his feet, and, with easy and unembarrassed respiration, finish his remarks in an uninterrupted flow. So soon as the morphia gets fairly into the current of the circulation, that moment the spasm is relaxed, and the patient is at peace, with nothing but his exhaustion to testify to the sufferings he has undergone.

The dose which I have used has been in all cases one-sixth of a grain of the hydrochlorate of morphia in a strong solution. In no instance has its use been followed by any more unpleasant result than slight nausea. This effect has not occurred on more than one or two occasions, from which I infer that the relaxation of spasm is by no means dependent on its production.

In no attack has there been any tendency to the recurrence of breathlessness after the first effects of the morphia have passed off. I have even been inclined to believe that its use has been succeeded by an unusually long immunity from further attacks.

I may add that those who have once experienced the rapid and unfailing relief of the subcutaneous injection are no longer content to await the action of the more uncertain remedies to which they had formerly been accustomed to resort.

CASES OF HYSTERIA.

BY THOMAS P. TUCKEY, M.B., T.C.D.

Medical Officer Ballyhooley Dispensary District, Castletown Roche, County Cork, Ireland.

CASES of hysteria occur frequently in every medical man's practice. Practitioners who have charge of dispensaries in Ireland, are often annoyed by the pranks which hysterical girls play, and as the ignorant parents are sometimes not satisfied with the medical officer's statement, they often get many a journey, when, by simply attending to his directions, they would cure their children, and save the doctor many a useless jaunt. Diseases of the bones are so often simulated that I consider this, next to the ordinary paroxysm of hysteria, the most frequent form of the disease. I need only mention the case recorded by Sir Benjamin Brodie, and state that I had a very similar case, when I was a pupil with Mr. Elliott, of Dublin, which I cured by the simple method of taking away her crutches, when she was taking the air in the green behind the hospital. When dinner-hour came she walked in of her own accord, and I heard no more of her spine disease and paralysis of the lower extremities. The following cases are of interest as illustrating some of the rarer forms of this protean malady.

CASE 1.—*Hysterical cough.* I was sent for last winter to see Miss R, aged 7, who was said to be labouring under violent bronchitis. The child was very intelligent (by the way, I have often noticed that hysteria occurs very frequently in girls who are very precocious), of dark complexion and very handsome features. Her family are remarkable for cleverness, her sisters are, some of them, nervous, and one of her brothers died in childhood from convulsions. On the hall-door opening, I was startled at hearing a most noisy bark, as I supposed, but a moment's consideration undeceived me. It was a cough, but a cough so like the bark of a large dog, that I think I may be pardoned for making the mistake. I could not have believed it possible, had I not seen the cause, that such a young child could produce such a sound. The cough was incessant; but, strange as it may seem, did not appear to cause much distress. I examined her lungs very carefully, and beyond a few slight râles could detect nothing wrong. A couple of days after, as her mother wished for further advice, I saw her with a surgeon of deservedly high standing, who pronounced her to be labouring under "laryngeal irritation," and prescribed bromide of potassium, powders composed of ipecacuanha and nitrate of potash, steam inhalations, and advised her to brush out her larynx with a 10-grain solution of nitrate of silver. I continued my attendance for some time. Her sister also was attacked with a peculiar cough, short and smothered, which I clearly saw was imitation. The child, when very young, had convulsions. The cough was soon got rid of by ordering her a mixture containing valerian. My first patient got only worse under the treatment; she began to lose flesh; the cough would go away for a couple of days and then return more violently than ever. I was in despair, as nothing that either the professional gentleman who was called in with me, or myself, prescribed, did any good. However, as she was manifestly losing flesh I thought it no harm to advise cod-liver oil. The child took only two table-spoonsful of the oil (to which she had a great dislike) when the cough vanished and never came back again. The first threatening of it was always averted by the sight of the cod-liver oil bottle and spoon. Of course the cure cannot be attributed to the exhibition of the oil; the greatest advocate for the drug could not claim that for it. It was, of course, the fear of having to take a medicine she greatly disliked, and I am sure that valerian, assafœtida and allied drugs often cure hysteria, more by the fear they cause by their nastiness, than by their physiological effect.

Case 2.—*Hysterical Dysphagia.* This is rather a frequent symptom of hysteria; however, I record the following case, as it, like the last, is remarkable as occurring in a young child. Both cases show that hysteria is not confined to girls who have come to the age of puberty, but occurs in girls in whom the menstrual function is not yet developed. It is evident that as hysteria occurs in girls of such tender years (as also sometimes in men and boys) it is not always, though generally, dependent on derangement of the uterine functions. On the 12th of April last, I was sent to see a child, named Mary Caravan, aged ten, the daughter of a labourer, who it was stated could not swallow, and had taken nothing, either fluid or solid, for some days. The child was healthy and strong, intelligent-looking, and when I saw her was lying in bed apparently heedless of all about her. When desired to open her mouth she did so, but when spoken to would not answer, but lay with her eyes fixed. On putting a spoonful of milk into her mouth she apparently tried to swallow it, but it was immediately rejected; there was no pain on pressing the throat, her pulse was quiet, and her tongue quite clean. I noticed that when the child thought I was not looking at her she turned her eyes round to see what I was doing. I got another spoonful of milk and put it into her mouth, and then in a determined voice ordered her to swallow it; she then did so without difficulty, and before I left I made her take a cupful of milk. I then left, stating, in her hearing, that when I came next, if I found she had not taken nourishment I should cut open her throat. I need scarcely state that she took nourishment from that time forward. The more I see of such cases the more convinced I am that hysteria is more a mental than a bodily disease, and that a few words spoken with an air of command, or the exhibition of a medicine, a "placebo" rather, accompanied by a few words signifying your firm belief in the drug, do more good than all the so-called specifics, or rather medicines, which are supposed to have power over hysteria, in the Pharmacopœia. The following short account of a young lady who suffered from sleeplessness for many nights, will illustrate my statement.

Miss A. G., subject to hysterical paroxysms, had not slept for several nights. During the day she usually had a fit of hysteria accompanied by sighing, fits of laughter, and tears, &c. I happened one night to be staying in the house, and she sent for me to know if I could give her anything to cause sleep. I had no medicines in the house, but gave her five drops of paregoric elixir in a wineglass of water, to give it some taste, stating that in spite of herself she should go to sleep. In five minutes she was asleep, and told me next morning that she had slept all night, but had a headache and *knew I had given her opium.* Well, I suppose she was right, but I must leave it to some one more acquainted with chemistry than I am to determine the *infinitesimal quantity.*

Can any one believe after this that hysteria is not a mental disorder? Surely there must be something mental in a disease which would cause a girl, like the Welsh fasting girl, to refuse all food contrary to the most common dictates of nature. I do not deny that hysteria is also dependent on bodily disorder; I have seen too many dependent on dysmenorrhœa, absence of the menses, &c. I have also published a case in the *Irish Hospital Gazette,* vol. ii. p. 280, where severe symptoms supervened on the expulsion of a uterine polypus; but I think that some cases are almost purely mental and dependent, perhaps, on an hereditary taint. Indeed in the case of the young lady whom I mentioned as suffering from sleeplessness, the father is most hypochondriacal, and some of the family have laboured under mental disorders. Some writer—I think Sir T. Watson—has said that hysteria in the female is hypochondriasis in the male. No truer observation has, I think, been ever made. Some mental diseases are dependent on remote causes, eccentric, others are centric. So I believe some cases of hysteria to be dependent on eccentric causes, as diseases of the uterus and its appendages, others to have their origin in the brain itself. The following case, I think, was also purely mental, as it occurred in a girl, aged 14, who had never menstruated, and had never even had the menstrual molimen.

M. F., the daughter of a steward, was seen by me last December. She could not stand when put on the floor, her legs sank under her, and she fell down in a heap, like a rag doll. She kept her arms doubled up under her chin, her head fell to either side as it was placed, her tongue hung out, and her jaw dropped like that of a corpse. Her eye was bright and intelligent, and when she thought she was not observed she looked furtively about her. I saw it was nothing but hysteria, and ordered assafœtida in its most nauseous form, *i.e.*, the tinct.

precipitated by water. The next time I saw her she could stagger about, and, laughable as it may seem, I used frequently to *drill her;* "down with the arms," and down they went, and so on, and in a few days she was quite well. I got a good deal of praise for my treatment, but know right well that the few words "spoken with authority" did more than all the assafœtida she took, and she took it with avidity; for I have sometimes seen the tastes of patients labouring under this disorder vitiated and women fancy things which in health they would have abhorred. I do not pretend to have written anything new; any one who turns to Sir T. Watson's *Practical Medicine* will see the symptoms I have recorded mentioned, and many more. But I think that in many cases, if the mind were more looked after than the body, patients would get well much sooner and with less expense of drugs.

THE DOMESTIC TREATMENT OF INSANITY.[1]

BY STANLEY HAYNES, M.D.

THE topic of these observations is one in which the majority of psychopathic physicians place little reliance, from the numerous difficulties met with in the satisfactory treatment of the insane outside of asylums; but there are many patients who can be efficiently attended to in private dwellings, other than their homes, thereby avoiding entry into an asylum, while the prejudicial influences of home treatment are escaped; and there are some cases in which removal from home is neither necessary nor proper, supposing the circumstances of the patients are sufficient to ensure the necessary care.

Dr. Yellowlees points out[2] that "insane patients treated at home are apt to get—1. *Too much narcotic medicine and too little general treatment;* 2. *Too much depression and too little support;* 3. *Too much confinement and too little open-air exercise,*" and says, "these unfavourable conditions are rendered still more so by—4. *Too much interference and too little tact.* . . . Where such evils are really inevitable no one should undertake the treatment, and the sooner the patient is sent to an asylum the better; but they are not always inevitable, even when they seem so at first, and many insane patients can quite well be treated at home."

Much irritation is often produced in patients when they find they are not supported by their families in any orders they may give, and are not obeyed by their domestics; they find themselves watched, that those about them are suspicious of them, that their liberty is curtailed, that they are no longer free agents where they are accustomed to do as they like. It often results that they become moody, fretful, suspicious, impatient, and revengeful, and resolutely refuse all kind offices and treatment; that they decline their meals, form strong prejudices—not to say hatreds—against those they have loved, and quietly watch for an opportunity of evading their friends or retaliating for their supposed wrongs. Removal from home and friends becomes necessary whenever strong antipathies are taken; the sooner the better, for all concerned. Insane antipathies are in inverse ratio to the former sane amount of affection, the revulsion of feelings being, too frequently, most marked: how often do we not hear of some unusually fond and affectionate husband and father killing his wife and children, and then attempting his own life, during a paroxysm of insanity?

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[1] Read before the Worcester Medical Society, 10th April, 1872.

[2] *British Medical Journal*, 5th August, 1871, p. 151.

By considering, briefly, the *classification* of insanity, as delineated by Skae or Batty Tuke, we can, to a certain extent, estimate whether a given patient may be treated at home, or if he should be sent away. Taking the pathological nosology suggested by Dr. Batty Tuke as a basis, it will be found that his Class I, Idiocy, congenital or acquired, can, and should usually, be treated outside of an asylum for the insane, either at home, in some institution for imbeciles, or in poorhouses, according to the position of the patients. Moral imbeciles involve themselves and their friends in so many difficulties that it often becomes necessary to place them in asylums, where their deficient moral organization cannot act prejudicially on others. In his next Class—Idiophrenic Insanity—we find most of the dangerous patients, and, therefore, the largest number of those for whom asylum care is requisite. Sthenic idiopathic insanity, phrenitic or inflammatory insanity, general paresis, traumatic lunacy, and many cases of epileptic insanity, are so frequently accompanied by aggressiveness and destructiveness that the majority of those suffering from these forms of disease must be placed under asylum control. Asthenic idiopathic insanity very often needs asylum precautions on account of the melancholic tendencies of the patients inducing them to obstinate refusal of food and to suicide. Senile insanity can usually be treated at home, when the patients are above the pauper class, but poor ones are best attended to in asylums. Coming next to Dr. Tuke's third Class—Sympathetic Insanity—we find many cases of madness, due to epilepsy, ovarian and uterine changes, pregnancy, the puerperal state, and hysteria, which are much better treated out of asylums than in them (supposing the means of the patients are sufficient); while insanity originating in masturbation, pubescence, or change of life (in either sex), and post-connubial insanity should be treated at home whenever it is possible, but the majority of those suffering from climacteric insanity are so suicidal, while some are also dangerous to others, that they cannot be treated safely outside of an asylum. In Class IV—Anæmic Insanity—are placed those disordered states of the brain consequent on starvation, fever, or lactation; these can, nearly always, be successfully managed at home. Class V—Diathetic Insanity—comprises the madness from tuberculosis and from syphilis: these demand asylum care in nearly every case. Class VI—Toxic Insanity—due to cretinism, delirium tremens, alcoholism, and opium, should not be sent into lunatic asylums for treatment, although it is at present often necessary to do so, from our urgent want of more suitable hospitals. I sincerely trust we may shortly have inebriate asylums, like those which have been so successful in the United States, for the reception, detention, and cure of cases of delirium tremens and alcoholism, and for "habitual drunkards" as defined by Mr. Dalrymple's excellent Bill, which deserves the energetic support of our profession and of all political economists. With regard to Class VII—Insanity due to metastasis, as from rheumatism, podagra, and cessation of long continued discharges—the type assumed by the cases must be our guide, as in all the other forms of mental disorder. In all of them we must be influenced by the homicidal, suicidal, or other dangerous tendencies of the patients. Sometimes powerful sexual feelings, and often the persistent refusal of food, render it highly advantageous that the patients should be cared for in asylums. Whenever the patient takes strong, unnatural dislikes to his relatives or those about him, or has delusions about his home, he requires to be removed to other persons and surroundings.

Half of the cases of mental infirmity are either produced or favoured by hereditary transmission. It is frequently found that disease passes over a generation or affects collateral branches of a family. As the danger of transmitting hereditary tendencies is much increased if one of the parents be insane at the time of procreation, it is our duty to prevent, as far as possible, all such chances of disease being propagated: hence there is the necessity of continence whenever insane patients are treated at home.

Intoxication in parents is a fertile cause of mental and physical imperfections; it is probable the larger proportion of criminality and lunacy in our poorer classes is, to a vast extent, the result of drunken parentage: this is a powerful reason for the restriction of drunkenness.

Prophylaxis.—When there is insomnia, more or less marked, with the sleep disturbed by distressing dreams, when we find exaggeration or impairment of sensations, inability to collect thoughts, and a feeling of confusion in the head, we must be on our guard; such a state often succeeds long continued watching and nursing, severe afflictions or disappointments, losses of property or position, intense mental application, long continued exertion or worry, anæmia, excessive venery or masturbation, uterine functional disturbances, or any depressing disorders, and can frequently be cured at home by producing sleep and by removing the causes as far as practicable.

By careful watching for and treatment of nervous symptoms, and by attending to the general health, we may often prevent attacks of insanity, and many slight cases can be cured, without the patients having any knowledge of the object of our care.

In the treatment of insanity, sleep, mental rest, change of associations, (the absence of the two latter is the great objection to treating patients in their own homes), and easily digestible aliment, are the chief things to be held in view.

The etiology of a case under observation is the best indication we have for the kind of treatment most likely to be of benefit: hence it is that the history should be ascertained as fully as possible. When the malady is idiopathic medicines will be found to occupy a very secondary place to moral guidance; but when it is referable to abnormal physical causes it is evident our chief reliance must be in remedies which act on the unhealthy organs. Many cases appear to be produced by moral influences which have been originally due to physical disorders: nothing is known of the latter because the patient has lost the consciousness of them.

We require to be watchful in the treatment of all patients who become demented; their nervous sensibility is so deficient that dangerous disease frequently does not cause any reflex actions or indications of its presence.

In treating insanity it is expedient to bear in mind that a considerable proportion of patients, when they become better, remember all that occurred to them and was said in their hearing during maniacal attacks.

Moral treatment is difficult to describe. It consists of all those means calculated to soothe the irritable, calm the violent, cheer the melancholy, and rouse the demented. Exercise is absolutely necessary. The maniac should have abundance of space and air; if he be violent and destructive he can often be quieted by having something to pull' to pieces.

Delusions must not be combated. Argument on them only serves to fix them in the patient's belief. They can be listened to for a little and their expression replaced by gradually changing the topic of conversation to a more healthy one. A patient should not be led to express any delusions or to suppose they are sneered at, or amusing, or not believed in, and they should never be spoken of to other patients. The patient should be offered some useful occupation, and stimulated to the exercise of healthy thought. Delusions are frequently referable to physical states, *e.g.* a patient with abdominal disorder often believes he is full of devils, serpents, glass, whales, &c. So that their expression leads us to investigate their source.

The practitioner will usually find it necessary to impress upon the custodians of his patients the vast importance of strict veracity, careful fulfilment of any promise, conscientious watchfulness, unwearied patience, absolute control of temper, unflinching firmness, and steadfast kindness. Once deceived the patient will be long suspicious, a broken promise will rankle in his disturbed mind, a lack of vigilance may result in loss of life, irritability with his whims will sacrifice moral control, want of decision will give the mastery to the patient, and any deficiency in kindness will be bitterly remembered. The patient must never be threatened, made fun of, or contradicted. The application of force will cause obstinate resistance.

The benefits of labour and of education in the treatment of insanity are so widely known and practised that it is unnecessary to dwell on them here.

Patients with hereditary predisposition, "demoniacal possession," with puerperal mania, who imagine their food is poisoned, that they are to be killed, and all those who express themselves, or are known, to be suicidal, must be guarded in such a manner that they cannot injure themselves.

This leads me to say a few words concerning nursing and attendance. It is a difficult matter to obtain proper care and control for poor patients, who should be sent to an asylum directly their insanity can be certified. I am convinced this is the best step that can be taken, for the benefit of all, the patient, the friends, the doctor, and the public. On no account, where it can be prevented, should a recent case of insanity be detained in a poorhouse. Those whose friends can afford the expense can obtain one or more experienced nurses or attendants on application to a private asylum superintendent: by doing this they have the satisfaction of knowing the patient will be kindly and judiciously attended, and that they and their household will be relieved of a considerable amount of anxiety and trouble and of some responsibility.

As change from hot and dry to cold and wet weather is frequently found to be concurrent with an increased number of suicides, melancholic patients, predisposed to abdominal disorders, should at all times be well protected by non-conducting clothing.

Much trouble is sometimes experienced in persuading patients who believe their food is poisoned, that they are full of various substances, that they cannot swallow, or who have other such delusions, to take a sufficient quantity of aliment. Very often the intestines require to be relieved from distension or acrid secretions; in such cases enemata suitable to the symptoms, sulphate of magnesia, croton oil, turpentine with castor oil, assafœtida, or other remedies, will often remove the objections to taking food. Fœtor of the breath frequently results from the ingestion of too little food, and then is removed by a good meal; it is as well to mention this because it might be supposed to indicate the necessity for a purgative when one would be decidedly injurious.

Alimentation should never be forced if it can be effected by reasoning and persuasion. Some patients will take their meals voluntarily when not watched, or when allowed to steal it, who positively refuse it if they suspect they are being noticed. When it becomes necessary to feed against the will of the patient, there are three modes at our choice: food can be given by the mouth, nose, and rectum. Feeding by enemata is seldom practicable when meals are refused. Alimentation by the mouth is more rapid than by the nose, and, naturally, is the favourite method; sometimes, though seldom, the patient will take food from a spoon or a spout. When the patient resists there is usually some trouble to the operator and pain to the patient in getting the mouth open and passing a tube to the stomach. It is frequently necessary to pass the tube beyond the voluntary muscles of the pharynx, to prevent the patient ejecting the fluid. The use of the stomach pump for alimentation is so disagreeable to patient and to operator, that I never use one if I can obtain a feeding bottle, or even a funnel to place in the end of the tube: the tube being inserted the fluid is poured down it, care being taken to regulate the flow so that the stomach may receive its contents gradually, and therefore be less liable to become irritable. The third method—that of feeding through the nostril—is the easiest in a refractory patient, although not the quickest: a nose-tube or funnel is passed along the floor of a nostril, the mouth being kept closed; the food must fall into the œsophagus; the feeding bottle, or a sauce-boat, or a jug, is the most convenient receptacle for the food; care must be taken to permit intervals for swallowing and breathing, lest any of the fluid enter the larynx.

Sometimes the treatment of a case is almost limited to alimentation. All asylum physicians know that numerous cases require hardly anything beyond careful nursing and feeding to ensure their recovery. In cases of insanity due to anæmic, debilitated states, champagne and nutrients induce sleep, and so act as the best sedatives we can give.

The use of *baths* is determined, to a great extent, by the state of the skin. A bath at the temperature of 95° F. is a good sedative in sthenic cases and is often succeeded by sound sleep. The duration of its employment varies according to the pulse and appearance of the patient, but it should not be continued more than half-an-hour. When the pulse falls or diminishes in hardness, or if the patient becomes pale, the bath must be discontinued. Whenever a warm bath is given to a maniacal patient the head should be kept cold by a wet towel wrapped round it and often wetted: a thin stream of cold water continuously poured from a height (affusion) is a simple and better plan; an easy mode of getting this is to have a skein of worsted hanging over the edge of a vessel full of water. The shower bath is so frequently regarded by patients as a punishment, the idea of which towards the insane is so revolting, that it is seldom used, although an excellent means of allaying excitement; when applied the feet should be in warm water, and the shower should not last longer than one minute. If there be any tendency to congestion of the lungs or other viscera, the shower bath should be used cautiously, if at all, on account of internal congestion retarding the return of blood from the head: in such cases the shower should be to the head alone, by causing the patient to lie down.

The *mustard bath* is most valuable in inducing sleep, and will be found of most benefit when there are symptoms of cerebral congestion. It is made by throwing two handfuls of mustard into a bath of 95° temperature, or, better, by mixing the mustard in a basinful of boiling water and then stirring the contents into the bath. The length of time for this bath will depend upon the state of the pulse and skin, but unless the pulse sinks too much it is advisable to continue the bath until the skin has become well reddened. The patient is then placed in bed and silence is maintained. Very often this simple treatment produces sound and refreshing sleep and so does incalculable good. Whenever the mustard bath is used care must be taken to protect the genitals by a wet towel firmly fastened around them. Sometimes it is difficult to get or to give the bath: in such cases I have found a very good plan is to wrap the patient in a sheet which has been saturated with a mixture of mustard and hot water, the same precaution being taken as with the bath, and similar effects being produced.

A soothing and easy mode of causing or continuing sleep, most applicable and often efficacious in asthenic cases, is to use a pillow case stuffed with fresh hops.

Medicinal sedatives.—It is bad treatment to give sedatives to patients to keep them quiet: they should not be given with that object, if we wish to cure our patients, but only to cause sleep when this is deficient.

The question of sleep is of paramount importance in the successful treatment of insanity. Failing to cause it by the giving of food when this has been taken in insufficient quantity, or by the change of circulation resultant on hot baths or application of mustard sheets, we must administer sedatives.

Chloral hydrate is the most valuable hypnotic we possess, producing sound sleep in those with the prodromata of mental disorder, and causing the most excited, troublesome patients to get as much sleep as we wish. Dr. Clouston[1] gave it in 30-grain doses thrice daily for more than a week without interfering with appetite, digestion, or intestinal functions. To a most violently excited general paralytic he gave ʒj. every night, causing ten, twelve, or fourteen hours' sleep without any apparent ill effect. For simple insomnia he found ʒj. doses sufficient in most cases, and 30 grains usually caused sound sleep: he had never failed with chloral to overcome sleeplessness. From doses of 50 and 60 grains he had not had any bad results. Mr. Wadsworth[2] found ʒj. doses, in porter, an excellent mode of giving it to obstinate patients refusing food and medicines, and that sleep, lasting from eight to ten hours, was produced.

Chloral does not appear, nor could this be expected, to have a direct curative effect in insanity; it causes a sleep whence the patient awakes with a good appetite, which, with corresponding digestion, is so essential in recent or maniacal attacks. My favourite formula for giving chloral is with tincture of orange peel in ℥ij. of cinnamon water, and a little syrup added, if Ferris' syrup of chloral is not used.

Opium.—If the derivatives of opium be used, they should be at night only. Dr. Clouston ascertained that if given during the day opium soon loses its effect, that the pulse is lessened in strength, the average temperature diminishes, the patients lose weight, and the vital powers are decreased. In long continued feeding cases a dose of morphia at bedtime is often very useful, and in melancholia and emotional insanity with depression it is sometimes invaluable. Acetate of morphia may be injected hypodermically with excellent effects when the patient will not swallow anything: a sleepless, restless, noisy, destructive, unwilling patient can easily be sent to sleep by this means; the moral effect is sometimes most valuable. I have found glycerine the best solvent for salts of morphia, because the solution neither dries up nor crystallizes (10 grains in a drachm).

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[1] *British Medical Journal*, 7th May, 1870, p. 457.

[2] *Ibid.* 16th July, 1870, p. 62.

Cannabis Indica.—Dr. Clouston,[1] before the introduction of chloral, most carefully investigated the effects of the various remedies then known, and ascertained that a combination of tincture of Cannabis Indica and bromide of potassium (half a drachm of each) was efficacious in allaying excitement and diminishing temperature in 90 per cent. of the patients to whom he gave the mixture, while the appetite and digestion were, so far from being interfered with, so good that the patients gained in weight, although the treatment of some cases was continued during nine months. This experience of Dr. Clouston is still important, inasmuch as we may not always be able to use chloral, and may in some cases wish to diminish excitement during the daytime and to limit the employment of chloral for obtaining sleep at night.

Bromide of Potassium has been already referred to. It remains to mention that it is a most valuable remedy for epilepsy. Dr. Clouston[2] gave 25 grains of it thrice daily for two years to seventeen epileptics, with great improvement in their condition.

Iodide of Potassium in ʒj. doses has sometimes remarkably benefitted the milder cases of puerperal and climacteric insanity.[3] In syphilitic cases, and where we presume there is some thickening of the cerebral membranes, the iodide, steadily given in full doses, does much good.

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[1] "The Action of Neurotic Medicines," Fothergillian Prize Essay, 1870.

[2] Clouston, *Op. cit.*

[3] *Ibid.*

Ergot of Rye.—In the treatment of recurrent mania, chronic mania with lucid intervals, and in epileptic mania, Dr. Crichton Browne[1] has found ergot of rye "almost uniformly efficacious in reducing excitement, in shortening attacks, in widening the intervals between them, occasionally in altogether preventing their recurrence, and in averting that perilous exhaustion by which excitement is so often succeeded." He gave the liquid extract in ℥j. or the tincture in ʒi—ij. doses every four hours when epileptic violence was existing, and says, "it exerts a prompt and energetic effect."[2]

Digitalis is frequently found singularly useful in destructive cases, especially in general paresis. It is advisable, notwithstanding the large doses of drugs tolerated, as a rule, by the insane, to begin this in doses of not more than ♏ x. of the tincture to a man, or ♏ vi. to a woman; it is easy to watch its effects and to increase the doses if necessary and advisable to ♏ xxx., lx., or even xc. Dr. Lockhart Robertson[3] has found a combination of digitalis with morphia very efficacious in occasional violent attacks of excitement.

Calabar Bean.—In the excitement of general paresis, Dr. Crichton Browne[4] has ascertained that the extract, in doses of gr. $\frac{1}{4}$ to gr. i. had a rapid and powerful calmative action. Observation of the condition of the pupils will be a valuable guide in the indications for the administration of the physostigma venenosum.

Whiskey, in four-ounce doses, was found by Dr. Clouston[5] to lower the temperature very much, to slightly quicken the pulse, and in many asthenic cases to calm the patients. Dr. Yellowlees[6] writes, "in many cases a liberal addition of stimulants is the best sedative we can give."

Beef Tea was also examined as a therapeutic agent by Dr. Clouston,[7] who observed that it slightly lowers the temperature, lowers and strengthens the pulse.

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[1] *Practitioner*, June 1871.

[2] This remedy, tried with great care in the Worcester County Asylum, was usually disappointing,

[3] *Journal of Mental Science*, April 1871, p. 149.

[4] *Ibid.*

[5] *Op. cit.*

[6] *British Medical Journal*, 5th August, 1871, p. 151.

[7] *Op. cit.*

In the foregoing sketch I have endeavoured to bring together, in a very condensed form, some of the more salient points in the treatment of lunacy, as pursued by the most recent investigators. Had I been granted more time for the reading of this paper I would have outlined many other and important topics relating to the subject, such as the advantages as well as the drawbacks of domestic treatment, the merits of asylums, the relations between physical states and mental symptoms, the latency of disease in the insane, the removal of causes of lunacy, restraint, the experiences of various authorities, the use of purgatives, general and local bleeding, counter-irritation, antimony, and mercury. Then I would have ventured to indicate some cautions and limits concerning certificates and the mode of examining patients, to draw attention to the risks to the sanity of households where patients are treated, and have mentioned the legal steps and precautions necessary with each place of treatment, whether at home, in hospitals, or in private or public asylums. My excuses for outlining the home care of lunacy before the members of this society are that much has been done of late to increase our knowledge of successful treatment, and that many of those who are fully occupied in general practice have little opportunity for investigating the deductions of those working in a special field.

CLINICAL LECTURE ON A CASE OF CATARACT EXTRACTION.

BY CHARLES BELL TAYLOR, M.D. F.R.C.S.E.

Surgeon to the Nottingham and Midland Eye Infirmary.

Alice B., from Woodville, in Ashby-de-la-Zouch. The patient you have just seen informs us that she is 58 years of age; we have also ascertained that she weighs six stone three pounds, and that she is a little over five feet in height. She has a fully formed cataract of the left eye, and cataract not quite so fully formed of the right. With the left eye she can distinguish, and guess with moderate accuracy at the nature of any large body intervening between herself and the light; but cannot find her way about alone. With the right eye she has merely perception of light, sufficient to enable her to indicate the position of the flame of a small candle held a short distance from the eye in a dark room. She is, to all intents and purposes, blind, and has been in this condition upwards of a year. She states that she lost her left eye four years ago; and in answer to my query informs us that she has always been long-sighted, which is what I should have anticipated from the apparent short antero-posterior diameter of the eyeball. She has, as you noticed, a flushed face, a kind of anxious look which often accompanies cardiac disease, and a nervous agitated manner: she also tells us, with tears, that she has recently lost her husband, and had other serious troubles besides poverty. The thyroid gland is considerably enlarged—Derbyshire neck as it is called from its frequency in the county in which she resides. The pulse is of the water hammer variety; and on further examination of the circulatory system we found that there was a murmur, heard loudest over the base of the heart, occasioned by insufficiency of the aortic valves, and accompanied with compensatory hypertrophy of that organ. She stoops considerably, and is evidently a very fragile person—one there will be no difficulty in carrying from the operating table to bed, as sometimes happens with our patients; in fact, she weighs less than a person of her height and age should do—a noteworthy fact; and this comparative emaciation is not as is occasionally seen in thin, active, so-called "wiry" persons, but evidently depends upon constitutional deterioration, and is accompanied with general ill health. We were all surprised when she told us that she was under 60, for she looks quite ten years older; and this extraordinary senescence at once aroused my suspicions, unfounded though they proved to be, as to the existence of diabetes, a disease which more than any other is the cause of premature old age, and which is often accompanied by cataracts.

When asked to extend her hand you noticed that it was very tremulous, an acknowledged indication of age, which we see exaggerated upon the stage, and which in this case apparently affects the whole muscular system, for, as I pointed out to you when estimating the extent of the opacity of the lens of the left eye by focal illumination, and the ophthalmoscope, a similar condition of the ocular muscles was manifest by slight nystagmus, when the patient was directed to look strongly inwards. Again the eyeballs are sunken from absorption of orbital fat, the corneal diameter is smaller than is usual (4½ lines), and we find on palpation, that the tension of the eyeballs is slightly below par, all of which symptoms point to degenerative changes, with probably (for that is the usually accepted explanation of the tremor) senile atrophy of the muscles, and loss of corneal elasticity; which last surmise is powerfully confirmed by the condition of the patient's skin, which we noticed was, especially on the backs of the hands, comparatively destitute of subcutaneous cellular tissue, thin, glistening and wrinkled. If you have ever seen the skin of a snake recently cast, you will doubtless have remarked that a layer of cornea is cast along with it, looking like a small pair of spectacles; and this intimate connection of the two structures will enable you to understand that a patient with a thin skin is likely to have a thin cornea, and *vice versa.* Now experience has taught us that attenuated cornea collapse when wounded, and this collapse becomes dangerous in proportion as the wound is large. If a flap of one half of such cornea is made, as in Danell's time-honoured operation, these marasmic membranes shrivel up, forming numerous folds or wrinkles; and after extension of the lens fall inwards, making of the eyeball a very good model of a tiny bird's-nest. The edges of the flap would sometimes, in the hands of the old operators, even retract, fall away, or become inflected, so that it was at times impossible to maintain the necessary completion of the edges of the wound. The vascular supply of the cornea is, as you know, very slight; incised, it does not bleed; and when abnormally thin it is specially apt to slough, should its nutrition be in any way impeded; in short, we may expect reverses and suppuration of the eyeball after extraction, in all such cases whenever ordinary reaction reaches the height of an inflammatory process. The iris, too, in these marasmic cases, is specially apt to become inflamed. As age advances the pupil becomes comparatively diminished; in young children it is, especially at night, widely dilated, in aged persons it is considerably reduced in size; a presbyopic patient can see to read through a pin hole in a card without glasses, and no doubt this habitually diminished diameter of the pupil compensates in some degree for the defects of advancing years. On the other hand, such pupils are often dilated with difficulty, you cannot reduce the iris to a mere ring with atropine, and in proportion as this is the case so is the liability to iritis and consequent closed pupil increased. On testing this patient with atropine, we found it necessary to instil a strong solution twice at intervals before we got fair dilatation of the pupil; the iris was, in fact, somewhat rigid, and the amount of dilatation obtained was smaller than usual though regular.

Now the cases of cataract in which we are called upon to operate may be conveniently divided into three classes. First, the exceptionally favourable; second, the average; and third, the exceptionally unfavourable. The case under consideration clearly belongs to the last category, for we have to contend with premature decay, which is worse than natural decay, a rigid iris with the increased tendency to iritis observable in marasmic individuals and a wasted inelastic cornea. Shall we, therefore, tell this very nervous lady that the chances are much against the success of the operation? I don't think that it would be either wise or fair to the patient to do so; would, in fact, be tantamount to a refusal to operate, for unless we encourage her I don't think she would submit to treatment at all. Shall we perform any other operation rather than extraction, such as discission or depression? If one eye only were affected and time consequently of no importance we might succeed in dissolving the cataract by repeated needle operations; in fact, I did so recently in the case of a lady, the wife of a respected member of our profession, but in the case now under consideration both eyes are affected, and it is important that sight should be restored as speedily as possible. We have diagnosed a cataract with hard yellow nucleus difficult to dissolve; the patient has not self-control enough, I am afraid, to submit to repeated operations, each of which she would consider a failure. I doubt if the eye itself would bear the strain of solution; the tendency to iritis is already great, and we should doubtless be driven to extract, at last, under more unfavourable conditions than exist at present.

Shall we attempt to depress or recline the lens? These operations are almost obsolete, though there are doubtless some very exceptional cases in which it would be wise to push the lens on one side rather than incur the certainty of failure by extraction. I recently extracted the lens from both eyes for an eminent county practitioner of medicine, who a few years ago had successfully operated by reclination upon his own brother, a clergyman, and no doubt we may occasionally succeed by depression; but 50 per cent. of such cases fail, and we shall obtain a very much larger average of success even in exceptionally unfavourable cases by extraction.

It is clear, therefore, that the only course open to us is to extract, and having fairly estimated the dangers we have to encounter, to do so with such precautions as experience has shown will give the best possible chances of success. Now, the great safeguard against disaster in these unfavourable cases is obtained by the preliminary removal of a small portion of iris, either upwards or downwards, according as we extract by a superior or inferior incision. In this way we guard against closure of the pupil, maintain free communication between the anterior and posterior chambers of the eyeball, prevent prolapse (that bugbear of extraction) and diminish the risks of inflammation by removing that portion of iris which is compressed during the exit of the lens, and which experience has shown is always the first to take on inflammatory action, diminish the risks of suppuration, and insure a state of parts which, if suppuration should occur, is most favourably adapted to prevent total loss of the eye. We cannot absolutely prevent suppuration by such a procedure, as Moorsen and others seem to suppose, but we may indirectly avert such a catastrophe by preventing the accidents which lead to it, and there is no doubt that when it does occur the subsequent progress of the cure is favourably modified by the previous formation of an artificial pupil. Again, the risks arising from collapse of the cornea, such as retraction, mal-adaptation, or even actual reflection, may be guarded against by limiting the size of the wound *i.e.*, making it as small as is compatible with the easy exit of the lens, and endeavouring to insure rapid healing by placing the incision as near to materials for repair as is possible, without invading the ciliary region.

(*To be continued.*)

ON A CASE OF TYPHOID FEVER WHICH SUDDENLY TERMINATED FATALLY DURING ITS TREATMENT BY DIGITALIS.

BY WILLIAM MURRELL, L.R.C.P.

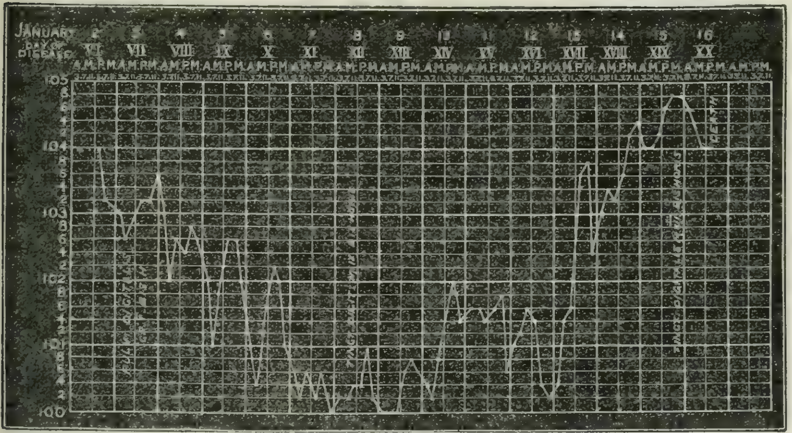
THE treatment of the acute specific diseases by large doses of digitalis has for some years found favour on the continent, although it has as yet been but little used in this country. The drug, according to Wunderlich, is especially efficacious in the second or beginning of the third week of typhoid fever, when the temperature is high and the pulse rapid. It is not claimed for the drug that it has any specific action upon the intestinal lesion, and it is said to be of most value when danger is apprehended from the intensity of the fever. It is usually administered in the form of an infusion, or in substance, but hypodermic injections of digitaline are occasionally given. The quantity required to produce a decided effect upon the temperature and pulse is for an adult from 2 to 4 grammes (ʒ½ to ʒj.) of the powdered leaves, this dose being spread over four or five days. Larger doses are, however, sometimes employed; Hirtz gives from 30 to 60, and Hankel from 47 to 62, and occasionally as much as 100 grains per diem. If the medicine be given irregularly, or if long intervals intervene between successive doses, the quantity is increased. Wunderlich finds that the temperature is slightly reduced on the first day, but that the pulse remains unaffected till the second or third day. The fall in temperature on the first two or three days is usually slight, but on the fourth or fifth day, when the full influence of the drug becomes manifest, there is often a reduction in the evening temperature of from 2 to 3 degrees. The temperature is seldom reduced to the normal, and never falls below it. On discontinuing the medicine the fall is at once arrested. When the temperature again rises after any considerable reduction has been made, it never reaches its former height. This second rise is often the forerunner of a definite improvement in the patient's general condition. The influence of the drug upon the pulse is most marked on the fourth or fifth day from the commencement of the treatment, there being often a fall of from 30 to 60 beats in the twenty-four hours. The pulse often falls below the normal, and this effect occasionally persists for some weeks after the termination of the illness. The change in the pulse-rate is coincident with the fall in the temperature. Wunderlich's conclusions have recently been confirmed by Bernheim, who however differs from him on a few comparatively unimportant points. Thus he found, that although the pulse and temperature do not fall uniformly, yet the pulse rarely commences falling before the temperature, or the temperature before the pulse. He also states that it is the rule for the pulse to fall below the normal. These views have not, however, received universal acceptance even on the continent. Thus M. Desnos of the Hôpital de la Pitié in Paris, found digitalis of little or no use in reducing the temperature in enteric fever or for otherwise modifying the course of the disease. He attributes its supposed success in other hands to a therapeutical illusion, and thinks that sufficient attention has not been paid to the natural course of the disease.

In January, 1874, the digitalis treatment was adopted at University College Hospital in a case of typhoid fever; the patient was in the children's ward, under the care of Dr. Ringer, by whose permission these notes are published. The progress of the case serves to illustrate the influence of the drug upon the pulse, and its fatal termination demonstrates the existence of a danger which has apparently been completely ignored by continental observers. The patient (F. F.), a bright, intelligent-looking girl aged ten, had been an inmate of an Orphan Asylum in the suburbs. From the statement of the matron, it appeared that some six or eight weeks previously a child suffering from typhoid fever had been admitted to the Home, and for a few days, before the nature of the illness was recognized, had been allowed to associate with the other children. In about a month, some sixteen or eighteen of the inmates were attacked with the fever, the majority being subsequently distributed among the metropolitan hospitals, a few only being treated privately. It was impossible under the circumstances to obtain any definite information respecting the onset of the illness; but the patient was stated to have been ill six days.

When first seen (January 2nd, at 7.0 P.M.) patient was lying on her back in bed, her countenance wearing a marked expression of illness. The face was not flushed, but there was a dark rim beneath the eyes; she was quite sensible, and answered quietly and rationally. On being questioned, she said she had a headache, but did not complain of it spontaneously; she had also a pain in the right iliac region, but there was not much tenderness, and no gurgling was felt; there was no rash observable on the thorax, back, or limbs; the spleen was slightly enlarged; there was no lung or heart complication; temperature (rectum) 104, pulse 130, quick (*i.e.* of short duration), easily compressible; skin moist; tongue moist and covered with white fur, except at the tip and edges; urine high coloured; sp. gr. 1029; free from albumen; bowels confined; no coryza; no sore-throat.

Although not a typical case of enteric fever, no doubt was entertained respecting the diagnosis. On January 4th (eighth day) at 7.0 A.M., patient commenced taking pulv. digitalis gr. j. every two hours. That night there was no evening exacerbation of temperature, which was a degree lower than at the same hour on the previous night. The evening pulse was 116, as compared with 132 of the night before. The bowels were opened once, the motion being formed and of a dark brown colour. On the following evening a further fall of 16 beats in the pulse was noted, and a reduction of 6-10ths of a degree in the temperature. The patient usually took about 8 grains of the digitalis in the twenty-four hours, the rule being not to give it at night if she were asleep. On the 6th there was a further fall of a degree in the 11.0 P.M. temperature. The pulse continued strong and regular. The bowels were again opened. On the 7th, patient heaved very much after taking the powders, but managed to retain them. There was no further reduction in the pulse, but the 11.0 P.M. temperature showed a fall of another degree. On the 8th, patient vomited twice immediately after taking the medicine, and an equivalent dose (9 ♏) of the tincture of digitalis was accordingly substituted. There was during the day no further fall in the temperature or pulse. Patient had two motions, not formed, of a yellowish-brown colour, highly offensive odour, and alkaline reaction. From this time the bowels were opened daily, the motions being usually of the character just described. On the morning of the 9th (and the thirteenth day of illness), two spots—rose-coloured approaching brown, about the size of a pin's head, slightly elevated above the surface, disappearing on pressure—were seen in the right lumbar region, and one just above the level of the first true rib. At 11.0 A.M. the pulse was 66, sharp, not compressible, and for the first time irregular. The irregularity consisted of the intervention of three or four semipulsations between every third or fourth beat. The pulse at 7.0 P.M. was 70, and at 11.0 P.M. 64, showing a fall of 68 beats in six days of the digitalis treatment. The respiration had also been reduced from 32 to 20. At 11.0 P.M. the pulse was 64, there having been a fall of 44 beats in twenty-four hours. On the 10th the pulse varied from 56 to 60, was full and sharp, and the irregularity had disappeared; respiration 16; there was a further eruption of typhoid spots, and an increased elevation of temperature; a trace of albumen was observed in the urine. On the 11th, patient was ordered brandy, 2 ozs., the digitalis to be continued as before. On the 12th, at 11.0 P.M., the pulse was 52 and respiration 32. There was a copious eruption of sudamina on the abdomen and front of the thorax. In the afternoon the temperature rose to 103·8; the patient was rolled over on her side, and her back was examined; there were no bed-sores, and only a few typhoid spots; there was no obliteration of the breath-sounds, no râles, and no dulness at bases; there was no cardiac mischief; the pulse varied from 52 to 60, being at night quick irregular, and compressible. On the 14th, patient was very restless, and complained greatly of thirst; there was a farther elevation of temperature, which at 11.0 P.M. was 104·4, the pulse being 72, slow, slightly irregular and not compressible. At 3.0 P.M., in consequence of the rise of temperature, an addition of 3 ♏ was ordered to the tincture of digitalis, but by mistake the medicine contained only 3 ♏, and of this patient took three doses, at five, seven, and nine o'clock. The error was then rectified, and at 11.0 P.M. patient commenced taking the full 12 ♏ dose. On the 15th, there was a slightly increased elevation of temperature, and the pulse, taken five times during the day, was 70, 106, 80, 68, and 90; it was fairly strong, irregular, but not intermittent. Patient was extremely restless during the night, and passed urine and fæces in bed. She was seen at 11.0 A.M., when the temperature was 104, the pulse fairly strong, but intermittent; half an hour later attention was drawn to the patient by a slight gurgling noise; the pupils were widely dilated; the pulse was extremely weak and could be felt with difficulty at the radials; in three or four minutes the patient was dead. There were no convulsions; the temperature in the rectum immediately after death was 104. An autopsy was made thirty-six hours after death. In the lower third of the small intestine, Peyer's glands were inflamed, and marked at intervals with small ulcers, varying in size from a pin's head to a split pea. In places the ulceration had exposed the transverse muscular fibres of the intestine. There were no signs of perforation; lungs and heart were normal.

The chart shows the course of the temperature taken six times daily, from admission to the termination of the case.



All the temperatures were taken in the rectum. This case serves to illustrate, in a very marked manner, several points of interest in this method of treating enteric fever. It effectually dispels the idea that digitalis is absolutely without effect on the temperature, and that a belief in its efficacy is founded upon a therapeutical illusion. The sudden reduction in the amount of the fever is clearly not due to the natural progress of the disease, and it is impossible not to associate the administration of the drug with the fall of temperature, or to fail to perceive that they stand in the relation of cause and effect. The occurrence of this reduction on the fourth and fifth days of the treatment, is strictly in accordance with Wunderlich's observations. It should be stated, that these temperatures were taken by carefully-trained nurses, and are in this instance probably of more value than if taken by a medical man; the latter might possibly have been unintentionally influenced by preconceived notions on the subject, whilst the latter must be absolutely unbiased. The rise of temperature during the continuation of the digitalis without the existence of any concurrent complication is noticeable particularly, as, in spite of an increase in the dose, the temperature soon reached an elevation greater than before the commencement of the treatment. The fact of the retardation of the velocity of the pulse continuing during the second rise of temperature would indicate that the value of digitalis as an antipyretic agent is not due solely to its cardiac action. The mode in which digitalis exerts its influence upon the heart is a point on which some difference of opinion still exists. Either it has a depressant influence on the (hypothetical) cardiac automatic motor centre, or it stimulates the inhibitory power of the vagus or its terminal ganglia. It would seem probable that there is a combination of both methods, the contraction of the arterioles, and the consequent increase of blood-pressure acting as auxiliaries. Respecting the mode in which digitalis reduces the temperature, there is even less agreement. It is obvious that in typhoid, as in other fevers, the elevation of temperature is due either to an increased production of caloric to its defective elimination, or to both processes combined. The rise of the blood-pressure would cause an accelerated circulation through the skin, and consequently an increased elimination of heat. It may be in this way that digitalis reduces the temperature. It has been supposed that the constitutional symptoms are in typhoid fever due to the entrance into the system of a number of minute organisms, micrococci, which, growing and propagating, consume oxygen, hydrogen, and carbon, and eliminate carbonic acid and water, the chemical combination being as usual attended with the production of heat. If such be the case, digitalis must be regarded as an antiseptic, having the power of arresting the growth or destroying the vitality of these morbid organisms. This theory fails to account for the elevation of temperature in this case at a time when the system must have been saturated with digitalis. It may be fairly assumed that the sudden termination of this case was to some extent, if not wholly, dependent upon the cardiac influence exerted by the digitalis. In other diseases, it is true, equally large or larger doses have been administered without the occurrence of any serious or dangerous symptoms which could be attributed to its use. In a case of acute inflammation as much as ʒij. of the tincture have been given to a child nine months old. The late Mr. Jones of Jersey, in cases of delirium tremens, administered half an ounce of the tincture, and repeated it in four hours, subsequently continuing the medicine if necessary in ʒij. doses. About seventy cases were treated by him in this manner without the production of any alarming symptom. Dr. Ringer, however, mentions two cases of delirium tremens treated by digitalis, in which the patient suddenly fell back dead, although to the moment of death there had been nothing to indicate the probability of this sudden and untoward result.

Practically, what we learn from the case is this: that although by means of digitalis we may rescue a patient from the deleterious influence of an excessive rise of temperature, yet that its use is not unattended with danger, and that during its exhibition death may occur suddenly and unexpectedly, and without a single note of warning.

SYMPTOMS, PATHOLOGY AND TREATMENT OF ALBUMINURIA.[1]

BY T. LAUDER BRUNTON, M.D., F.R.S.,

A VERY large proportion of the patients that medical men in large towns are called upon to treat present symptoms of anæmia or want of blood.

They are pale and washed-out looking, their whole appearance being apt to recall the blanched look of a washerwoman's hands, and when we examine the gums and the inside of the lips, or pull forward the lower eyelid, and look at its inner surface, we find that all the mucous membranes are paler than in health.

When we come to question the patients, we find that they complain of the very symptoms which we might *à priori* predicate from the condition of the blood. As it is not unfrequently convenient to be able to tell the patient what he or she feels, we will run over in order the symptoms of which persons suffering from anæmia usually complain. First of all, the use of the blood is to nourish the tissues generally, and the muscles among the rest. If the blood is defective either in quantity or quality, the tissues will be insufficiently nourished, the muscles will be unable to do their ordinary work, and the patient will complain of being weak and easily fatigued.

Secondly, the blood has to act as a carrier of oxygen from the lungs to the tissues. All muscular work, all secretion from glands, in fact we may say, every process of life is a process of combustion. Whenever the supply of oxygen fails the work is lessened, and at length stopped entirely, just as the exclusion of air would extinguish the fire in a furnace, and bring to a complete stand-still the engine to which it furnishes the motor power.

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[1] Read before the Abernethian Society at St. Bartholomew's Hospital.

Now the combustion in the body goes on at a great distance from the outer air, and it would stop for want of a sufficient supply of oxygen were it not for the hæmoglobin of the blood. The hæmoglobin is the red colouring matter of the blood, and is contained in the red corpuscles alone. When they are deficient it is deficient, and its chief function and theirs is to act as a carrier of oxygen. It takes up this gas in the lungs, carries it to the tissues, and then gives it up to them. At each breath that a man takes he saturates a quantity of the hæmoglobin in the bloodvessels of his lungs with oxygen, and then on it goes to his muscles to keep up combustion in them. If he is running, leaping, rowing, or using his muscles much in any way whatever, they must get more oxygen than when he is sitting or lying, and in order to give them as much as they need he must breathe much oftener than usual. By doing this, a healthy man can get enough oxygen to enable him to make great exertions, and if his work is only moderately hard he scarcely feels that his breathing is different from usual. But if he unfortunately happens to have a quantity of fluid in his chest, so that one lung can only expand to half the size it ought to do, he cannot take in the proper quantity of oxygen at each respiration. He is therefore obliged to breathe oftener, so as to make up for the small quantity of air that he can take in each time, and so a moderate exertion will make him puff and blow like a healthy man after a hard run.

Now, exactly the same thing takes place when a person has too little hæmoglobin and red blood corpuscles as when he has too little available lung tissue. It is easy to see this. If a man has only half the quantity of hæmoglobin in his blood that he ought to have, it can only take up about half the amount of oxygen that it ought to do, and there is not much to choose between this condition and the case where only one lung is working, and thus giving only half the proper quantity of oxygen to the blood. If the blood only *takes* half the right quantity of oxygen, it is much the same as if it only *gets* half the right quantity.

Thus it is that anæmic persons are short of breath, and if they go quickly up stairs, they puff and blow so that they cannot speak when they get to the top, and, in short, they are incapable of any great exertion.

Thus the first symptom of anæmia, not to mention the pallor, is muscular weakness; the second is shortness of breath.

The third symptom, or set of symptoms, refers to secretion. As I have already said, secretion is a process of oxidation as much and perhaps even more than muscular contraction is. Ludwig[1] and Spiess found that the saliva secreted by the submaxillary gland of a dog was actually 1½° C. warmer than the blood of the carotid artery, and of course to heat the saliva in this way there must be very active combustion going on in the gland during the process of secretion. To supply the oxygen required for this combustion, the arteries of the glands are found to dilate, and torrents of bright-red oxygenated blood rush rapidly through them. Nor is this process confined to the salivary glands alone. The stomach, the pancreas, and probably also the intestines, all get a copious supply of arterial blood during the process of secretion, and although a rise of temperature indicative of active combustion has not been demonstrated to take place in them during the act of secretion, it is in the highest degree probable that these other glands resemble the salivary ones in this respect. Seeing, then, that oxidation plays such an important part in secretion, we could hardly expect that it would go on briskly, any more than that the muscles would work easily when the blood is poor in hæmoglobin, and the supply of oxygen which it ought to convey to the glands is consequently deficient.

Now the whole process of digestion depends on secretion, and if the salivary glands and pancreas do not secrete properly, the starchy part of the food will not be rendered soluble; if the stomach does not pour out gastric juice, the albumen and fibrin will not be digested; and if the pancreas is not working, the fats will pass out unchanged. And even when these organs do their work after a fashion and succeed in digesting the food at length, yet if they secrete their appropriate juices in small quantity the food will be only slowly digested. It will then undergo partial decomposition in the intestine instead of being rapidly dissolved and will give rise to the formation of gas in the intestines with all its attendant discomforts. The symptoms of this condition are—there is no appetite, the food lies heavy at the stomach, and there is frequent belching of gas which often brings up with it particles of undigested food or sour burning liquids. There is often nausea, sometimes retching, or vomiting. The bowels are sometimes very loose and at others very confined.

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[1] Ludwig's "Physiologie," vol. ii. p. 341.

We may thus add to muscular weakness and shortness of breath a third symptom of anæmia, viz. *dyspepsia*.

Having thus found that the muscular, respiratory, and digestive functions are all impaired by anæmia, we naturally inquire how the nervous system gets along. The brain cannot work without oxygen any more than the muscles, indeed it requires a still more constant supply than they, and when we direct our attention to it we find that it enjoys no exemption from the general debility. Deficiency of motor power manifests itself in languor, listlessness, and laziness, while the sensory functions evidence their disturbance by giddiness, drowsiness, headache, weight in the head, throbbing of the arteries, neuralgic affections, and numberless odd nervous symptoms, which lead medical men who are themselves suffering from anæmia to believe that they have all sorts of mischief going on within their brain-pan, until a little quassia and iron removes their symptoms and allays their apprehensions.

We come lastly to the circulation, and we find that it too suffers, so that although we have put it last, one of the symptoms connected with it sometimes attracts our attention more than all the others together. This symptom is œdema or swelling from the presence of fluid in the cellular tissues.

How does this fluid come to be there? During life there is a constant exudation of fluid from the bloodvessels, and after this has done its work by affording nutriment to the cells of which these tissues are composed, it is again absorbed, partly by the veins and partly by the lymphatics. In health the exudation and absorption balance each other and so there is no accumulation of fluid in the tissues; but whenever the exudation becomes too rapid, or the absorption becomes too slow, such an accumulation takes places. When it occurs in the tissues it is called œdema ; when in a large lymphatic space, better known perhaps by its more common name of serous cavity, it is termed dropsy.

Now absorption has been shown by Goltz to depend very much on the vaso-motor nerves.[1] When these are acting powerfully, absorption takes place rapidly; when they are acting slightly, absorption takes place slowly.

Deficient action of these nerves also causes fluid to be poured out more rapidly from the vessels,[2] as well as to be absorbed more slowly. Thus any weakness of the vaso-motor system tends to produce œdema in a double fashion, and to such weakness we may probably ascribe the œdema we meet with in anæmia. It is quite evident that if the œdema is dependent on deficient re-absorption, we shall find it most marked in those parts where the circulation in the veins and lymphatics is most languid—*i.e.*, in the feet and ankles ; and this is indeed what we do find in œdema depending on venous obstruction ; but when it depends on excessive exudation also, it may be found wherever the tissues are loose, as in the lower eyelid and scrotum. In health the vaso-motor nerves keep the arterioles throughout the body more or less contracted, and thus prevent the blood which the heart pumps into the aorta from running out quickly into the veins. They thus keep the arteries always well filled and fairly on the stretch, so that the heart cannot empty itself into them, and thus stretch them still more without using a fair amount of force. But when the vaso-motor system gets weak, it no longer keeps the arterioles up to their work, and in consequence they occasionally dilate and let the blood through them more quickly than they ought. The arteries consequently get partially emptied ; the heart can pump all the blood into them with almost no exertion, and so it sometimes seems as if it did not know what to do with its superabundant energy, and works fast and loose like the driving-wheel of a locomotive on a piece of greasy rail. Another symptom of anæmia is, therefore, palpitation.

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[1] Pfluger's Archiv. vol. v. p. 33.

[2] Ranvier. "Recherches Expérimentales sur les Production de l'Œdeme," *Comptes rendus*, 1869.

We may now at last count up on our fingers the symptoms of anæmia, not reckoning, but always bearing in mind, the pallor of the patient. We have (1) muscular weakness; (2) shortness of breath; (3) dyspepsia; (4) weakened nervous system, both sensory and motor; (5) weak circulation leading to palpitation, and œdema or dropsy.

All the varied symptoms included under these five heads may, as we have seen, be caused by anæmia, though we must not forget that some of them may be present without anæmia. For example, an individual may come complaining of dyspepsia, though a single glance at his plethoric countenance shows you that no want of blood is the cause, but rather gourmandizing and gluttony above the powers of even the most healthy stomach to sustain. But supposing we have all the symptoms included under the five heads just given, and the pale face and blanched mucous membranes leave no doubt on our minds as to the presence of anæmia, we have next to ask what is the cause of it, in order that, instead of trying to remedy one symptom by itself and another symptom by itself, we may strike at the root of the disease and remove the anæmia on which they all depend.

There are two ways in which a man may come to want money; (1) he may not get enough to supply his daily wants, either from laziness or misfortune; or (2) he may lose what he has either by being extravagant and squandering until poverty compels him to tighten his purse-strings—steadily living above his income, and thus losing his fortune by degrees; or by rashly speculating, and thus losing a great part of it at one stroke.

And just so is it with the blood. We use up some of it every day to keep our tissues in working order; and unless this loss were regularly compensated by the food we eat our blood would soon be too much reduced in quality, if not in quantity, to sustain life. For be it remembered that a proper quantity of blood will not nourish the tissues if its quality be deficient, any more than an ounce of copper will pay a man's debts when they amount to an ounce of gold. Whenever, then, this nourishment, which is daily received into the blood, is insufficient to supply the daily expenditure on the tissues, anæmia will, in a greater or less degree, be sure to follow. It does not very much matter whether the supply of food taken into the mouth is insufficient, or whether imperfect digestion prevents assimilation. Dyspepsia, then, by lessening the appetite, and rendering the digestion of such food as is consumed less perfect than it ought to be, has much the same effect as partial starvation and is one cause of anæmia.

But anæmia we have already seen is a cause of dyspepsia; and thus the one aiding the other they go on from bad to worse, in a vicious circle unless something interferes to break it.

The cases of anæmia which I would liken to the spendthrift are those of chlorotic girls where the anæmia really seems to depend on some of the organs or tissues using up the blood in a way they have no right to do, and thus squandering the precious fluid without getting any good from it, and indeed without one's being able to see where it has gone, unless the deep-red colour of the urine one gets in such cases on the addition of nitric acid to it may be taken as an indication that more than a fair share of the hæmoglobin of the blood has undergone some mysterious transformation, and found too ready a way of escape through the kidneys.

Anæmia may also be a consequence of sudden and considerable losses of blood, such as those which occur in menorrhagia, or from bleeding piles, which not unfrequently drain away the vital fluid and sap the patient's strength, ere ever he be aware of the mischief which is going on.

Important as these causes of anæmia are, there is yet another no less important, and in which the drain is still more constant, although in it one may not see the blood actually leave the body while still retaining its well-known colour.

This cause to which I wish especially to direct your attention is albuminuria.

In it the blood is constantly losing one of its most important constituents, the albumen, which leaks through the kidneys along with the urine, and thus runs to waste instead of remaining in the body and ministering to its nutriment. Although the serum-albumen thus lost is not a constituent of the red blood corpuscles yet the deficiency in it seems in some way to affect them, and their numbers diminish possibly, though we cannot say with certainty, because they cannot get the albuminous constituents of their hæmoglobin in requisite quantity. For it must be remembered that the hæmoglobin, or colouring matter of the blood which plays such an important part in the oxygenation of the tissues, consists of an albuminous substance, globulin, and a non-albuminous substance, hæmatin. There are regulating arrangements in the body which keep all its different parts in mutual harmony and dependence on one another, so that, as St. Paul said long ago, "if one member suffer, all the members suffer with it," and if one part is starved, the other parts frequently, if not always, suffer privation with it. The serum-albumen being, then, deficient in the blood, it is not at all astonishing that the albuminous constituent of the colouring matter should also be below par.

The symptoms of albuminuria are, therefore, those of anæmia, and we often suspect the presence of the disease from the mere look of the patient before we have addressed a question to him or applied a single instrument of physical diagnosis. There is not only paleness from the general want of blood, but there is a greater tendency to œdema than in other forms of anæmia, so that the face is not only pale, but puffy, pasty, or doughy looking, with a tendency to swelling about the lower eyelids. The ankles and shins are frequently œdematous and pit on pressure, and there may also be accumulations of fluid in one or other of the serous cavities. These appearances in a patient at once arouse a suspicion of albuminuria, and we proceed to test them by examining the urine. In a state of health this secretion should be absolutely free from albumen. We detect the presence of this abnormal constituent in two ways: 1st, By boiling; and, 2nd, by adding nitric acid. On boiling urine containing albumen, coagulation takes place, and according to the quantity present we have either a faint haze giving an opalescence to the liquid, a heavy coagulum, or any intermediate condition between these two. There are some fallacies in this test, however, which require attention, for ignorance of them may lead us to imagine that there is no albumen when it is really present, or to fancy it there when the urine is completely free from it. The first fallacy is that serum-albumen forms compounds both with alkalis and acids, to which the names of alkali-albumen and acid-albumen have been given respectively. Now neither of these compounds are coagulated by heat, and although serum-albumen itself is readily coagulated by boiling, yet if acids or alkalis are present when we begin to heat it, the very warmth of the liquid, as we gradually raise its temperature, causes the albumen to combine with the acids or alkalis and form acid-albumen, or alkali-albumen. Thus it may happen that by the time we reach the temperature at which the albumen should be precipitated it is no longer present in its original condition, its combinations being already complete.

Thus, if the urine be very strongly acid, or very strongly alkaline, we may get these compounds formed, and then heat produces no coagulation, although albumen is present. We therefore ascertain the reaction of the urine by means of litmus paper before applying heat. As the tissues of the body are all alkaline, it is very unlikely that the urine will contain so much free acid as to produce acid-albumen, and indeed such a condition is almost never found except in persons who have been taking large quantities of mineral acids.[1] In such a case we would add sufficient alkali merely to neutralise the acid before we boiled the urine, but this is so rarely necessary that we generally disregard this source of error. Excessive alkalinity, however, is not so uncommon, and we very frequently have to add a few drops of acetic acid to the urine so as to render it slightly acid before boiling.

This addition of acid, however, serves a double purpose, and not only enables us to detect the albumen more certainly when it is present, but prevents us from mistaking other things for it when it is absent.

In some urines alkaline phosphates or carbonates are precipitated by heat and may be mistaken for albumen, but a drop or two of acetic or nitric acid prevents their precipitation, or if added after they have already been thrown down dissolves them again and causes the urine which they have clouded to become clear again.

It is thus evident that heat alone without acid is an insufficient test for albumen, and nitric acid alone without heat is also unsatisfactory and may be deceptive; but nitric acid coagulates albumen and causes a haze or coagulum just like heat.

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[1] Stockvis, "Sur l'Albuminurie," p. 3.

If the urine contain a large quantity of urea, the nitric acid may cause the formation of a crystalline precipitate of nitrate of urea, which is, however, but rarely mistaken for albumen. But if urates be present in large proportion, one is much more likely to fall into error, for the nitric acid drives out uric acid from its combinations with soda or potash, and free uric acid being much less soluble than urates a precipitate is formed which is much more likely than the urea one to be mistaken for albumen. A little heat now applied to the urine causes either urea or uric acid to redissolve, and the urine clouded by them to clear; but it has no effect on the haze or coagulum produced by albumen.

In testing for albumen, then, the best method of proceeding is to allow three or four drops of nitric acid to trickle down the side of the test tube containing the urine. If no haze appears we may conclude that the urine is free from albumen.[1] It won't do to pour in acid until the test tube is half full, for it is possible that if only a little albumen is present it may be converted into acid-albumen and dissolved by the concentrated acid. If a cloudiness appears we must not at once conclude that it is due to albumen, but must warm the urine over a spirit lamp. If it is really albuminous the opacity will remain, but if the cloud is due to urea or uric acid it will disappear.

So much for the symptoms of albuminuria, which are paleness and pastiness of the face, a tendency to œdema and dropsy, complaints of weakness, shortness of breath, dyspepsia, nervous symptoms, and, I may add, occasionally palpitation.

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[1] Stockvis, "Sur l'Albuminurie," p. 4.

(*To be continued.*)

Review.

Researches into the Antagonism of Medicines; being the Report of the Edinburgh Committee of the British Medical Association. By JOHN HUGHES BENNETT, M.D., F.R.S.E., Chairman and Reporter. 8vo, pp. 100. Edinburgh: Edmonston and Douglas.

IT is with sadness that we take up our pen to review this work, for within the last few weeks British medicine has sustained a severe loss by the death of John Hughes Bennett. We shall form a better idea of the severity of this loss if we try to imagine what we should do without cod-liver oil as a remedy or the microscope as a means of diagnosis, and then recollect that to him we owe the introduction of them both into medical practice in this country. To him also, more than to any other, is due the abandonment of bleeding in pneumonia and of the abuse of mercury; and whatever view may be held regarding priority, it cannot be gainsaid that he independently recognised leucocythemia as a distinct disease, and gave it a more correct designation than that bestowed upon it by his German rival. But the influence of his personal teaching was perhaps greater than that which he exerted through his writings; and although he may have been too sceptical on some points, and not always sufficiently well informed upon others, the beneficial effects of his training upon those who attended his course can hardly be over-estimated. For exactitude and truth were what he constantly inculcated, and his somewhat brusque manner only served to impress more deeply upon the student that his business was with facts and not with ideas. Many a one who has been called on by Mr. Bennett to examine a case and state what he found will remember the sharpness with which he replied to the hesitating statement, "I think I find so-and-so," with "You have no business to *think;* it is either there or not there; and you must *know.*" The habits of thought engendered by such training are invaluable; and several of his old pupils, now become teachers, have shown their appreciation of his method by adopting it themselves. For the last year or two illness interfered sadly with his teaching; and in the preface to the present work he mentions that but for the state of his health it would have been even more complete than it is. The researches which it details, though originated by Dr. Bennett, were chiefly carried out by Dr. McKendrick, who was also a member of the committee, aided in one part of the investigation by Dr. Alexander Bennett. The method employed was that which had previously been used with such success by Dr. T. R. Fraser.

The subjects of investigation were the antagonism between strychnia and chloral; between calabar-bean and atropia, chloral morphia and strychnia; between atropia and bromal hydrate or morphia; and between tea, coffee, theine, caffeine, and guaranine, on the one hand, and meconate of morphia on the other. The results showed that chloral greatly diminishes the violence of the convulsions produced by strychnia, and may save life after a fatal dose of the latter poison has been given; but strychnia is not so likely to save the life endangered by chloral. The effects of calabar-bean are antagonised by atropia and by chloral, are uninfluenced by morphia, and are modified, but not antagonised, by strychnia. The action of atropia is partially antagonised by morphia, as Dr. Fraser had previously found by atropia, and as Dr. McKendrick finds in the course of the present researches by bromal-hydrate. From the experiments upon the action of theine, &c., which were made by Dr. Alexander Bennett, it appears that theine, caffeine, and guaranine, are to a certain extent antagonistic to morphia, and that infusions of tea or coffee in several instances prevented the coma which would otherwise have been produced by the morphia. The whole research is of great value, and we recommend all medical men to read it carefully, and to make themselves acquainted with the limitations which exist to the antagonistic power of the drugs of which it treats, lest perchance in a case of poisoning they may render their patients' fate more certain by the very means they employ to avert it.

Clinic of the Month.

Empyema in Children.—Dr. Mackey, in a clinical lecture on this subject, observes that there are three special points to remember about it. First, that it is more common in children than in adults. Secondly, that its treatment by paracentesis is more successful. And, thirdly, that its physical signs may be peculiar in certain respects. From comparative examinations of the tables of the Children's Hospital and Queen's Hospital, Birmingham, it appears that in children the ratio of empyema to pleurisy is about 40 per cent., whilst in adults it does not average more than 5 per cent. In regard to the operation, he thinks that, given a free opening, a large drainage tube and frequent syringing, and a child with empyema may almost certainly be saved, but the same confidence can never be had in the case of adults. In regard to the physical signs, Dr. Mackey observes there will be lessened chest movement on the affected side, flat dulness, increased resistance, and probably bulging, often pitting on pressure, and tenderness, but displacement of liver or heart is not invariable, and the breath sounds not only at the apex, as might be expected in adults, but also over the area of effusion may be tubular or bronchial, and not absent. In the *majority* of cases, however, when the effusion has become *purulent*, the breath sound will be deficient. Dr. Mackey gives the details of three cases of empyema in which tapping was resorted to, all of which were successful. The first child was intensely strumous; the second got severe pertussis; and the third lived amidst scarlet fever. Only *one* opening was made in each case, but it was free. This he thinks sufficient for children, but in the case of adults he prefers two openings. In each case free syringing was adopted. (*Medical Times and Gazette*, Sept. 25, 1875.)

Nitrite of Amyl in Nervous Cephalalgia.—Dr. R. A Douglas-Lithgow states that some six years ago he had his attention first directed to nitrite of amyl, and as this therapeutic agent is at present receiving great attention from the profession, he wished to make known one of its effects which he has found almost specific. In 1869, whilst reading a number of the *Edinburgh Medical Journal*, he observed a remark made by the late Sir J. Y. Simpson, in the report of one of the meetings of the Edinburgh Obstetrical Society. He said he had found the inhalation of two drops of the nitrite give immediate relief in cases of nervous cephalalgia, however severe. From that time to this Dr. Douglas-Lithgow has been in the habit of so using it, and, where due care was taken in the selection of cases, he has never known it fail to produce entire and almost immediate relief. In several instances he has had to increase or repeat the dose, but, as a general rule, two drops have been sufficient. He places two drops on the palm of the patient's hand, and quickly diffusing these with his finger over the palmar surface, he tells her to cover her mouth and nose with her hand, and to inspire deeply and quietly. No time should be lost after the nitrite is dropped on the hand, as it evaporates rapidly. The patient should be seated while inhaling, as the peculiar effects of the nitrite are produced almost instantaneously, and may occasionally alarm a very nervous or hysterical female. Fortunately these symptoms last a very short time—generally less than two or three minutes—and with their cessation the pain almost invariably ceases. Two drops may be given as a draught in water, instead of by inhalation, but he has found the latter mode much more satisfactory. In addition to the " flushing of the face " which invariably results after the administration of nitrite of amyl, patients generally complain of great throbbing in the temples, " fluttering of the heart," and a feeling of breathlessness, as if they were " dying away." Some describe a sensation of " tingling from head to foot," and several have experienced pains in the limbs analogous to cramp; while in other cases every object seems to have acquired a bright yellow hue, such as sometimes results from the use of santonine. These severer symptoms, however, are by no means common. Used as just recommended, Dr. Douglas-Lithgow does not think there is the slightest risk in its administration; but, owing to the temporary palpitation of the heart produced in most patients, care should be taken in administering it in cases of organic cardiac disease, &c. Should any excitement or other alarming symptom occur, cold affusion to the head, face, and chest, with a free supply of fresh air, are the proper means to use, but he has never had occasion to do so. The nitrite (which is cheap) should be procured from reliable makers only, and, as an economic suggestion, he recommends anyone using it to preserve it in a stoppered glass bottle, having an additional glass cap-cover. (*Lancet*, Oct. 16, 1875.)

Diagnosis and Treatment of Secondary Affections of the Heart.—Dr. Fothergill remarks that in forming a diagnosis of the secondary affections of the heart, and determining that the heart symptoms are really consequential to some prior and causal disturbance of the circulation, the following points deserve notice:—1. The attacks of dyspnœa, palpitation, or sensation of heart stoppage are not induced by effort, but come on independently of any exertion. They not uncommonly supervene during perfect rest, and even when lying in bed. Not rarely they permit of active exertion which does not tax the heart in this class of cases, whilst in primary affections of the heart effort almost always renders the evidence of true heart failure more pronounced. 2. The pulse is not that of cardiac debility, even when very irregular the pulse is resistent, and in this respect differs strongly from the irregular compressible pulse of cardiac dilatation. 3. The first sound of the heart is usually good—loud, clear, and of fair intensity. It preserves its muscular sound and is not simply valvular, and does not approach the second sound in character. There are no evidences of heart failure accompanying the disturbed rhythm. 4. The second sound of the heart is accentuated, which is a most important diagnostic point, as in primary disease or debility of the heart this symptom is never found; whilst in the forms of heart trouble which are the consequences of some prior disturbance of the circulation, causing a rise of blood-pressure in the arteries, this objective symptom is never wanting. The accentuation of the second sound will of course be more or less intense, according to the rise in the blood-pressure. It may be found at both the pulmonary and aortic valves. It is most distinct, however, at the aortic valve, and heard most loudly at the second right costo-sternal articulation. The semi-lunar valves are closed by the recoil of the elastic arteries: if, then, the tension in the arteries is increased, these valves will be closed with unwonted force, and their closure produces an accentuation of the normal sound. Such accentuation is always found in the pulmonary valves when the mitral valve is diseased. Here it is the measure of the engorgement of the pulmonic circulation. When heard at the aortic orifice, this accentuation may be associated with aortic aneurism, with general paralysis of the insane, or with general rise of blood-pressure in lithiasis. It is easy to separate these conditions. Having decided that the cardiac troubles are secondary to some primitive affection of the vascular system, causing a rise of blood-pressure, the principles of *treatment* are as follows:—1. To improve blood depuration by removing the accumulated products of nitrogenised waste; and this can be best accomplished by a combination of measures. First, to cut down the nitrogenised elements of the food to the minimum, so as to lessen the production of waste products. Secondly: to administer potash or lithia in combination with vegetable diuretics and so to aid in the elimination of waste by the kidneys. This latter action will be assisted by throwing the skin into action. 2. If there be present a certain amount of cardiac debility, the depressant effects of the above treatment may be met by the administration of digitalis along with them. 3. After immediate relief has been furnished it is desirable to administer alkalis together with iron for some time. Contrary to what is indicated in primary debility of the heart, the diet should be restricted and the amount of nitrogen in the ingesta should be small. 4. Active exercise in these cases is rather indicated than otherwise, and the increased oxidation induced thereby is beneficial, while the exertion does not act injuriously upon the heart. (*Lancet*, Oct. 9, 1875.)

Microscopical Appearances in Congenital Alopecia.—Drs. H. M. Jones and R. Atkins give an account, with an excellent plate, of the appearances on making a microscopical examination of the skin in a boy who presented himself for treatment at the Cork Ophthalmic and Aural Hospital. The lad never remembered having any hair on the scalp, but thought that when young he had some downy hairs. The skin of the scalp was quite smooth and polished; he had aborted finger nails, badly formed, with ridges and furrows; his teeth were irregular and far apart, marked with transverse ridges, and discoloured. The skin on the scalp appeared to be equally sensitive in all parts. Microscopical examination showed that the cuticular surface of the scalp was formed of a fine fibro-areolar tissue, with numerous large loculi of adipose cells scattered in its meshes; beneath this the fibroid element became denser, was rapidly and highly colourable with carmine, the individual fibres being broad and wavy, and of a homogeneous waxy appearance; deeper down the fibres again became narrower, and appeared in parts as if broken across. In this were seen some irregular loculi crossed by fine trabeculæ, and containing a granular material; and in several parts of all the sections examined an aggregation of circular and ovoid apertures deeply lined with small and compressed epidermic cells. These apertures, occurring in exactly similar situations in the several portions examined, as they were cut one after another, were evidently transverse sections of cylinders running horizontally through the tissue, which might perhaps have represented hair-follicles, both as regards their situation, position, and structure. Below the fibroid tissue already mentioned, and applied upon it, was a layer of epidermis very much atrophied, the individual cells being closely compressed and withered. In parts of some of the section there was an indistinct appearance of papillæ, but this epidermic layer is for the most part applied quite flat on the tissue above it, and nowhere is there any appearance of true corium. In all the sections examined, one or two true aborted hair follicles were seen forming shallow pits in the epidermic layer, and lined by a layer of similar cells, the open extremities looking *downwards*. The epidermic layer was only present in the centre of the portion examined when the cut had reached deep enough to meet it, and it was at the junction of this layer with the tissue on which it lay that the piece was removed. (*Dublin Journal of Medical Science*, September, 1875.)

Chloral as a Local Application for Ulcers.—Mr. Lucas, of Guy's Hospital, commenced the use of chloral among his out-patients in August last, for cases of sloughing wounds and fetid ulcers, and being pleased with the result, he has since given it a somewhat extensive trial in the wards. The effect of the local application of chloral appears to be that of a powerful stimulant and disinfectant; it has no soothing or sedative effect upon the part to which it is applied, but, on the contrary, gives rise to considerable pain, which lasts some time; nor does it, even when used over a very extensive surface, ever become absorbed in sufficient quantity to act as an hypnotic. Whether it is taken up into the circulation or not matters little, since the quantity used as a local application is so small compared with the dose administered as an internal remedy, that were the whole of the drug applied to find its way into the blood, the quantity absorbed would still be very much less than that of an ordinary sleeping-draught. Its local application is, therefore, eminently safe and free from the dangers which sometimes follow the use of opium lotion or carbolic lotions long continued. Mr. Lucas has used solutions of various strengths, that which he has found most useful being a solution of four grains of hydrate of chloral in an ounce of water. The application of a lotion of this strength is, as we have just stated, often attended with considerable smarting, which may last a quarter of an hour, but the smarting becomes less at each subsequent application. In cases where the patients have complained much of the smarting, the lotion has been diluted to the proportion of three or two grains to the ounce. The treatment of foul sloughing ulcers by means of chloral lotion has been attended with great success, the surface of the sore quickly cleansing and assuming a healthy appearance, whilst the subsequent healing has advanced with a rapidity in some cases quite astonishing. The following is one of Mr. Lucas's cases:—A stout, florid woman, aged fifty, had suffered from varicose veins for twenty years, and from ulcers for ten years. The ulcers for which she was admitted on Sept. 8th had been open for four years. At the time of her admission there were two irregularly oval ulcers occupying the front and outer side of the left leg. The anterior one was nearly seven inches in length, by three inches and a half in breadth; the second, situated behind this, was two inches and a half in length, by three-quarters of an inch in breadth. The surfaces of the sores were deeply excavated, and sloughing in parts, whilst the edges were thick, raised, and everted. Under the use of chloral lotion the ulcers quickly became sweet and clean, and the cuticle spread over them with very great rapidity, even while the surfaces of the sores were still considerably below the level of the surrounding skin. The smaller ulcer was completely healed within a fortnight, and at the time the patient reappeared all that remained of the large one was a small fusiform patch of healthy granulations, about half an inch in breadth and two inches in length, upon which a blue line of cuticle was rapidly encroaching. (*Lancet*, Oct. 16, 1875.)

Treatment of Tapeworm by Creosote.—Mr. Brickwell states that about fifteen years ago a man discharged from the army with lung disease and tapeworm came under his notice, when it occurred to him that the destructive properties of creosote to the lower grades of animal life might be made available for killing or so weakening the vitality of intestinal worms that they could easily be got rid of. He therefore gave him some three times a day, shortly after meals, for six days, and on the seventh a dose of castor-oil and turpentine, which brought away a worm twelve yards long. He has since tried creosote for destroying round worms with great success. In one case a large mass of more than a hundred worms of all sizes came away, and the patient has not been further troubled by them He has not succeeded so well with the troublesome thread-worms of adults, but has some doubts if the remedy were fairly tried. He has just had the following case of tapeworm:—W. E., aged twenty-three, labourer, pale, sallow, and sickly-looking, but fairly fleshy, came to Mr. Brickwell with hæmoptysis and symptoms of tubercle in the lung, which passed off, and he was able to work through the winter. Four months ago he came to him suffering with the prevailing malady, bronchitis, and he then first began passing portions of tapeworm. He deferred treating him for the latter until his health was better. A month ago he returned in fair health, having frequently passed portions of worm since his last visit. Mr. Brickwell gave him one drop of creosote made into a pill with pulv. tragacanthæ co. three times a day, half an hour after each meal, so as to impregnate the ingesta. As the stomach bore the medicine well for two days, he increased the dose to two drops three times a day for two more days, and then to three drops at a time for two more days. On the seventh day he gave him a dose of castor-oil (aperients acted strongly on the patient, or he would have combined it with sp. terebinthinæ). On the fifth day of the treatment a worm eight yards long came away, and he had slight diarrhœa. Not seeing Mr. Brickwell he continued the creosote on the sixth day, and took the oil on the seventh, which acted very freely, but brought no more worm away. There appear to have been no symptoms to indicate the presence of the worm until he began to pass portions of it. He had, however, complained of a feeling of weakness, sinking, and faintness, for several years, more particularly in the evening. These feelings have now disappeared, and he is stronger, better, and more healthy-looking than before. The two points that struck Mr. Brickwell are—first, that he began passing the worm during a febrile attack (could that have influenced the vitality of the worm, and so tended to its passage ?) ; and secondly, that he had a chest complication. It is a curious coincidence that these symptoms should have co-existed in the only two cases of tapeworm which have come under his notice. (*Medical Times and Gazette,* Sept. 18th, 1875).

Extracts from British and Foreign Journals.

Galvano-Caustic Operations.—M. Amussat, after giving full details of the mode of applying the galvano-caustic wire, records the case of a lady, aged 26, who suffered from a tumour of the right breast, which was three or four times larger than the left. It was hard, tuberculated, the nipple was retracted, the skin bluish, with veins wandering over it, in a word, it presented the aspect of cancer. She had been confined some time previously and had received a blow on the breast, shortly after which the breast had begun to enlarge. She applied to a physician, and leeches and poultices of various kinds were tried without effect. She then came under the care of M. Amussat, who believing he perceived fluctuation, made a deep incision, and a stream of greenish pus escaped. On introducing the finger a large cavity was felt with smooth walls beneath the mammary gland, and as this last did not appear to be seriously diseased, he determined to preserve it. A canulated sound was introduced through the opening, and an opening and counter opening above and below were made in the sac, through which a double seton was passed, cold water dressing with some pressure was applied, and free discharge followed, but as no healing appeared to take place, M. Amussat applied concentrated nitric acid to the interior of the sac by means of a piece of wood. After this the flow of pus diminished, but still did not entirely cease. M. Amussat once more determined to cauterize the sac, but this time not with nitric acid, but with the galvano-caustic wire, which was introduced through the openings. The result was in every way satisfactory, the patient took a bath within an hour, and then applied a wet pad to the breast. For several days irrigation with warm water was applied, and after the discharge had ceased, which occurred in the course of a few days, the gland soon resumed its normal size and shape. (*Gazette Medicale de Paris*, Sept. 11, 1875.)

On Transparency as a Symptom in Solid Tumours.—Dr. Lücke observes that the property of transparency has hitherto been chiefly attributed to, and regarded as having a diagnostic value in collections of fluid, such as hydrocele and cysts of various kinds. But it is well known that with even only a moderate amount of diffused daylight the same character of translucency is presented by solid parts, such as the fingers and the ears, and that with more intense light by still thicker parts, as the palms of the hands and the forearm. This point has received but little attention in relation to solid tumours, and Dr. Lücke refers to a case in which this peculiarity was very well marked, and led him to make an erroneous diagnosis. A man presented himself at the hospital with swelling of the testis of the left side, which had attained the size of the egg of a goose. The tumour was painless, and had a knotty hard mass in the situation of the epididymis, whilst the fore part gave a very distinct feeling of fluctuation or palpitation, and was at the same time to a marked degree transparent. The diagnosis made was on these grounds:—tubercle of the testes with accompanying hydrocele. Castration was performed, and Dr. Lücke was not a little surprised, on making a section of the extirpated tumour, to find instead of fluid a grey, spongy mass, which was obviously of the nature of sarcoma, as was afterwards more positively ascertained by means of the microscope, on examination with which it was found to be a case of round-celled sarcoma. Even after the removal of the tumour the phenomenon of translucency was well marked, and still more distinctly after the lapse of twenty-four hours, notwithstanding all precautions were taken against the admission of lateral light. It is easily conceivable that such an erroneous diagnosis might be made when it is remembered how much weight is usually placed upon the symptom of transparency in cases of hydrocele; and it is obvious that an exploratory puncture alone would in this case have solved the difficulty. It is generally accepted, Dr. Lücke proceeds to say, that transparency is a peculiarity exclusively belonging to cavities filled with clear transparent fluid; and it is known that if in hydrocele the fluid contains cholesterin crystals, or if the tumour consist of a spermatocele the translucency is much less distinct, whilst if blood be mingled with the contained fluid the tumour is rendered almost or quite opaque. The translucency of the ears and fingers is due essentially to the circumstance that the fluid circulating through them is clear; and it is an extraordinary fact that a tumour composed of cells containing more or less hazy fluid with many granules should be as transparent as a hydrocele. Lücke has satisfied himself that extirpated hypertrophic lymph glands, provided they have not undergone caseous degeneration, are translucent outside the body. The light must traverse their tissues as it passes through ground-glass. It may be presumed that the transparency will be met with in many other kinds of tumour if their position in the body is such as to permit the light to traverse them, and this is especially the case with lipomata and myxomata, whilst it will probably be absent in cancer and adenomata. Whether we shall hereafter be able to recognize minute differences in the characters of the transmitted light and in its intensity is at present uncertain, but the whole subject is well worthy of careful investigation, since it may lead to the discovery of a new means of diagnosis in doubtful cases. (*Centralblatt für die Chirurgie*, No. 29, 1875.)

The Inoculation of Varicella.—Prof. Steiner inoculated ten subjects with varicella, and eight times successfully, but never observed variola as a consequence. The stage of inoculation in all instances lasted eight days, and the disease appeared in four cases without any premonitory symptoms. The highest temperature was as a rule coincident with the outbreak of the eruption, and the defervescence was rapid and complete. Secondary attacks supervened with elevation of temperature. Amongst the eight successful cases five had been vaccinated and three not. As inoculating material Steiner employed the transparent watery contents of the fresh vesicles. Two cases are described in full detail: on the third day the puncture made in inoculating the virus had disappeared; on the fourth day febrile phenomena appeared with distinct exacerbations in the evening and remissions in the morning. Before the eruption of the exanthem the mucous membrane of the mouth and throat became intensely reddened. The general eruption was fully developed on the eighth day and pursued the usual course. (*Wiener Med. Wochenschaft*, No. 16, 1875.)

Injections of Tincture of Iodine into the Cavity of the Uterus.—In a paper on this subject Dr. Trask seeks to show 1st, That a very considerable proportion of cases in which the injection of salts of iron has apparently saved life have been those in which it accomplished this end not in virtue of its local styptic action, but because of its power to excite reflex action when cold, friction, pressure, &c., have failed. 2nd, That when it produces coagulation of blood in the orifices of the blood-vessels there is danger that the coagulation may follow the vessels into the substance of the uterus, producing dangerous thrombi, and that the blood already collected in the cavity of the uterus also may become converted into a hard, intractable coagulum which the uterus cannot expel, and which may, after a few days, decompose and give rise to septicæmia. 3rd, That there is evidence for believing that as an excitor of dormant reflex action, tincture of iodine may be substituted for the iron with positive advantage, owing to its efficiency as an excitor and from its antiseptic properties. If these points are established the use of iron salts in a solution sufficiently strong to induce coagulation of blood in the uterine vessels should, at any rate, not be resorted to until tincture of iodine has been tried and failed. (*Journal of Obstetrics*, February, 1875.)

The Action of Jaborandi on the Heart.—Mr. Langley describes the following as the main features of the action of jaborandi on the heart. If a few drops of the glycerine solution, or if one of the extracts be injected under the skin of a frog or toad the heart will become red and dilated, and the beat slower. These characters increase till the heart is of a dark red colour, very much distended in diastole. He has invariably found that the ventricle stops beating before the auricle. According to Vulpian the auricles are the most readily affected; this certainly is not the case if it be taken to mean that the auricular beats are the first to cease. It does, however, not unfrequently happen that the auricles are the first to show the effects distinctly, beating only in every alternate heart-cycle. This has been most frequently observed after the aqueous extract has been given. At a later stage the heart-beats generally become very irregular; at one time the auricles contracting only in every alternate heart-cycle, at another the ventricle, then perhaps a complete stoppage of both, followed by a few normal beats. Moreover, in point of energy the different parts of the heart-beat seem to be quite independent of one another; at one time the auricles contracting feebly, and the ventricle strongly, at another exactly the contrary. But with all these variations the ventricle has in all the many animals that Mr. Langley has examined, been the first to finally cease contracting. The auricles, as a rule, cease contracting before the sinus, but he would hesitate to say that it is always the case; sometimes certainly if the sinus beats at all the beat is confined to the part closely adjoining the auricles, when it is very difficult to tell whether the movement is caused by a contraction nearly synchronous with the auricles or by the auricular contraction alone. Atropia sulphate quickly restores the heart-beat, but with less and less readiness, as the heart has been stopped for a longer time. The restored beats are at first feeble, then get stronger till an almost or quite normal beat takes place. The auricles show this effect most strikingly, and not unfrequently the auricular beat will be resumed on injection of atropia sulphate, but not the ventricular. Thus it would appear that the auricles have a greater tendency to functional activity than the ventricles; their rhythmic beat is more difficult to stop, and when stopped is more easily set going again than that of the ventricle. (*Journal of Anatomy and Physiology*, Vol. X., Part I., October 1875.)

Therapeutic Action of Chlorate of Potash.—In one section of a long communication on this subject, which is not yet concluded, M. Isambert demonstrates very satisfactorily that chlorate of potash does not undergo any change in passing through the body, neither losing oxygen nor chlorine, but being eliminated *en masse* by the secretions. This view is supported by the observations and experiments of MM. Laborde, Milton, and Gambarini, but it is opposed on theoretical grounds by MM. Berthelot and Gubler, who believe that, like the iodides, it undergoes decomposition. (*Gazette Médicale de Paris,* October 9, 1875.)

On Treatment by means of the Stomach Pump.—Dr. Paul Schliep, of Berlin, has treated seventy-four cases of disease of the stomach in 982 sittings, with Küssmaul's stomach-pump, and obtained very satisfactory results. Amongst these were two cases of poisoning, one of arsenic and the other by a spirituous solution of lac; both cases recovered. Twenty-five cases of simple gastric catarrh (the pump being employed on the average nine times in each case); seventeen cases of gastric catarrh complicated with other conditions, of which four cases were complicated with chlorosis, five with nerve lesion, four with pulmonary disease, two with jaundice, two with neoplastic formations in other organs, ten with ulcus ventriculi (three acute cases, the pump being used in the chronic cases about fourteen times); fourteen cases of dilatatio ventriculi (of which five were cured and four improved, and in which the pump was applied on the average twenty-one times); six cases of carcinoma ventriculi. Dr. Schliep, it will be seen, thus treated conditions with the stomach catheter which are usually left alone; and on the other hand, conditions, as ulcer and carcinoma, which it is usually considered unadvisable to treat with instruments that are likely to produce movements of vomiting. The treatment of simple gastric catarrh with the pump is justified by Dr. Schliep, first of its success, and secondly, on its obstinacy under other methods. He found great benefit from it, even after a few sittings only—and explains it on the same principle that brilliant results are often obtained from an emetic. A recent gastric ulcer is often a *noli me tangere,* but considerable benefit was experienced in chronic and cicatrized ulcers. In cases of dilatation of the stomach, Dr. Schliep commenced his treatment with daily complete evacuation of the stomach. If the muscular coat resumes its contractility, and the atrophy and degeneration of the glandular tissue have not proceeded too far, the abnormal decomposition that occurs in the gastric contents soon disappears. The effects of this mode of treatment on cancer of the stomach were decidedly alleviating. In performing the operation the patient must attend carefully to his breathing, must not bite the tube, and must first hold the head backwards, in order that the obstacle presented by the posterior wall of the pharynx may be surmounted, and then forward, in order to convert the projection formed by the bodies of the third and fourth cervical vertebræ into a concavity. Having entered the cardia, which can be recognized by the length to which the tube has passed, and a slight resistance, an effort should be made to see whether any anatomical change has taken place, which may be known by the occurrence of pain, strong resistance to the entrance of the instrument, and perhaps blood mingled with the contents of the stomach when they have been pumped out. He finds cases of dilatation of the œsophagus above a stricture at the cardia offer the greatest difficulty to the introduction of the sound. The sound having been introduced, M. Schliep begins with the injection of several syringefuls of water at about the temperature of the body, until the patient feels the stomach to be full, or vomiting sets in, after which he carefully extracts the fluid again. Care must be exercised in securing an instrument that works easily and well, so that the wall of the stomach may not be sucked into the openings of the sound. He does not attach any importance to slight tinging of the contents with blood, and remarks that strong alkaline solutions introduced into the stomach produce general hyperæmia and consequent bloody straining of the contents. In order to remove adherent mucus from the walls of the stomach, he recommends that the patient should be made to execute several movements of vomiting by tickling the fauces, by means of movements of the tube, though this is usually unnecessary, movements of vomiting occurring spontaneously. In other cases, and especially where an ulcer is present, vomiting should be avoided as much as possible. Considerable caution should be exercised in withdrawing the tube, lest portions of the mucous membrane which have got sucked into the holes should be torn away. Dr. Schliep distinguishes the contents of the stomach in different states into 1. Clear mucus, with neutral reaction, met with in simple chronic catarrh; 2. Yellow fluid, with neutral reaction, accompanying catarrhal inflammation of the stomach and duodenal mucous membrane in scleria; 3. Mixed contents, composed of undigested food and mucus, with, for the most part, slightly acid reaction; 4. Contents in a condition of acid fermentation, occurring in recent inflammatory conditions and ulcer; the prognosis is here good; the removal essentially effects a cure; 5. Contents containing abundance of fungi (Leptothrix oidium albicans, sarcina), reaction acid, quantity sometimes extraordinarily great; the regular evacuation of the contents of the stomach greatly tends to remove the accompanying dilatation; 6. Putrescent contents (coffee-ground like) often accompanying cancer of the pylorus, with dilatation of the stomach; the quantity is here again very large and the reaction acid; 7. Abnormal gaseous contents. Amongst the remedies used, Dr. Schliep enumerates the following as having been pumped in and again evacuated: bicarbonate of soda, of which two teaspoonfuls were added to a wash-hand-basinful of water, and injected in cases where the reaction of the contents were strongly acid; potassium permanganate in the proportion of 1 to 100 of water, the quantity injected being again a wash-hand-basinful of water; used in cases where the contents were putrescent; carbolic acid, in the proportion of 1 to 40, though in this case the acid solution should not be allowed to remain long in contact with the mucous membrane; chloralum, boracic acid, and tincture of myrrh, were respectively used in weak solutions, when the quantity of mucus secreted was large, and the membrane torpid. The diet was carefully selected, and food given only in small quantities at a time. (*Deutsche Archiv f. Klin. Médicin,* B. xiii.)

On Diphtheria.—Letzerich distinguishes two forms of local diphtheria. The active principle of one of these may be obtained by heating the urine of a child suffering from diphtheria, and filtering it. The specific diphtherite fungus remains in large quantities on the filter. After the filter has been repeatedly washed with warm distilled water, a very active infectious virus can be obtained. If fragments of this be placed upon the mucous membrane of a rabbit a local diphtheria of the first kind will be produced. This appears in the form of exudations varying in size from the head of a pin to that of a bean. The fungus penetrates to a variable distance into the epithelial layer, and destroys it to a greater or less extent. When the fungus has wandered deeper into the Malpighian layer and into the connective tissue, it excites cell growth and that condition which is termed diphtheritic exudation. It is characteristic of this local form of diphtheria that the phenomena of general disease resulting from the pathological and anatomical changes of internal organs only make their appearance after the local changes have been established. The general form of diphtheria can be thus produced by inoculating the system with the products of the local form in the course of two or three days. The point when the inoculation is performed presents little or no exudation, and usually only a milk-white cloudiness of the mucous membrane, but the growth of the fungus in the deeper tissues is correspondingly active, and this produces a very deleterious action on the health generally. Both forms of diphtheria occur in man, and there are even epidemics in which the general disease preponderates over the local, but even in them, microscopical investigation shows the presence of large masses of fungus in the tonsils. The changes resulting from the entrance of the fungus into the economy are either leophio disturbances occasioned by embolia of the fungus or atrophy (*Corrosion Verzehrung*), or are due to the entrance into the system of the poisonous products of disintegration. (*Virchow's Archiv Band* lix.)

Antiseptic Surgery.—At the late meeting of the British Medical Association, Mr. Lister gave two demonstrations of his method of applying antiseptic treatment. The first patient exhibited was a man 54 years of age, who had a painful effusion into the knee-joint. This had been of twelve months' duration, and had been treated by repeated blistering, which had failed in effecting a cure. In such cases under ordinary circumstances little can be done but the introduction of Dieulafoy's aspirator, the tube of which often becomes blocked by portions of lymph. Under the antiseptic treatment, however, an incision may be made, and a drainage tube introduced without risk, and paradoxical as it may appear, the more free the wound and the more widely it gapes, the more certainly is inflammatory disturbance of the joint avoided. In this case the antiseptic treatment was practised in its simplest form. The antiseptic was not introduced into the joint, nor applied to the affected part at all. It was merely employed externally to prevent the access of septic mischief while an exit is provided for the fluid from the interior. The skin was first purified with a strong (1 : 20) solution of carbolic acid in water, which is best for detergent purposes, since it blends with oily substances and animal matter, and penetrates the hair and hair follicles, and thus renders the skin absolutely pure, surgically speaking. Mr. Lister then produced an antiseptic atmosphere by means of a spray producer. Acting on the principle of Siegle's steam inhaler, high pressure steam issuing from a minute orifice from a boiler, heated by a spirit-lamp, sucks up a strong solution of carbolic acid by a tube that dips into a vessel containing it, and blending with it in about equal quantity, forms a 1 to 40 spray. The spray thus produced is so extremely fine that it scarcely moistened the surface of a slate against which it was directed, was perfectly respirable, and at the same time was quite reliable. Mr. Lister called attention to the careless way in which the minutiæ of the antiseptic method of treatment is in many instances carried out; bone forceps, for example, being used that had only been dipped into the solution and, therefore, which had not been thoroughly cleansed. After a little while these little purifications are instinctively performed, but at first it requires thought, intelligence, and constant care. The operation having been performed, the next point is so to dress the wound as to make sure that nothing septic will get in before the next dressing. The material Mr. Lister has used for some time past is an open cotton cloth, with the fibres impregnated with a mixture of carbolic acid and common resin. Common resin holds carbolic acid with great tenacity, and hence gives it off so slowly as to be unirritating to the skin, yet at the temperature of the body it furnishes a sufficient supply of the acid for a trustworthy antiseptic dressing. A small piece of gauze dipped in carbolic acid lotion is then placed next the wound, and the dressing on which he relies for excluding putrefaction is applied in the form of eight layers of the gauze sufficiently broad to cover the surrounding skin for several inches in every direction, and beneath the outermost layer is placed a piece of thin macintosh cloth to prevent the discharge from going directly through the dressing. The dressing is secured by a bandage, for which strips of the antiseptic gauze prove very convenient. The subsequent progress of the case operated on at the meeting was in every way satisfactory. (*Edinburgh Medical and Surgical Journal,* September, 1875.)

The Pathology of the Blood.—M. Laptschinsky, of St. Peterburg, states that in various febrile affections, and especially in those of an infectious nature, the red blood corpuscles which are often swollen and not well defined do not form rouleaus, but run together to form irregular heaps and masses, and at the same time many of them are only one third of the normal size and rather more or less intensely coloured. The white corpuscles are often very numerous. In the blood of those suffering from typhus, Laptschinsky counted about eighty white corpuscles in one field of vision amongst the red corpuscles, though the power of the lens used is not stated. In a patient suffering from cholera, he counted from 110 to 130. In a very anæmic patient, in whom amputation of the leg had been performed in consequence of fistulous passages, he found on the day after the operation one colourless to 21·7 coloured. He observed that the white corpuscles of patients in fever as well as their nuclei prevented active amæboid movements. In the blood of pneumonic and pleuritic patients he observed the red corpuscles with frequently a stramonium fruit form. The masses described by Max Schultze as granule masses M. Laptschinsky found only in the blood of febrile patients. From his observations on the relative numbers of red and white blood corpuscles in various diseases on the day before death he has satisfied himself that the development of the red from the white is either retarded or arrested. (*Centralblatt,* No. 42.)

Pathology and Treatment of Elastic or Claw Fingers.—By this term Dr. O. Berger indicates a peculiar condition of the fingers in which, while they preserve their normal appearance, they can neither be completely closed nor completely extended. The movements are performed naturally up to a certain point, and are then suddenly arrested, and complete extension or flexion can only be effected by energetic voluntary effort on the part of the patient, and not even then without assistance, when considerable elastic resistance is experienced and a cracking sound perceptible to the patient and the bystander occurs, and the joint becomes suddenly completely bent or stretched. This sudden passage from the partially to the completely flexed or extended state has given rise to the name of this somewhat rare affection. The condition is a very annoying one, as it renders writing and the like difficult or impossible. Almost all the patients, which were exclusively females, complained of frequent stabbing pain in the metacarpo-phalangeal joint of the affected fingers. The pain becomes extremely intense when the finger is kept in the fixed position, and the act of extending or flexing it is also accompanied by pain. It is in most cases accompanied by rheumatic pains in the joints of the upper and lower extremities. Careful examination showed that whilst the interphalangeal joints present no symptoms of disease, and are absolutely free from pain on passive movement or pressure, a very distinct sensitiveness exists in the metacarpo-phalangeal articulation, which is almost always limited to a small point on it volar surface, corresponding to the position of the flexor tendon Here may be felt on the ulnar side of the tendon a hard immovable body about the size of a lentil, which is particularly tender on pressure. This Dr. Berger has found to be invariably present. One of his patients presented a symptom which appears to be of some importance in regard to the genesis of the disease. In this patient, in which the right middle finger was affected, after the finger had been bent and opened out quite naturally several times, each motion began to be accompanied by a peculiar grating sound, which is well-known to be a characteristic symptom of inflammation of the tendinous sheath. This therefore indicated that the sheath was the seat of the disease. As a rule the fully developed state of the disease is preceded by a lancinating or tearing pain in the articulation. The greater number of cases recorded in medical works were, like those of Mr. Berger, of the female sex. The joint most commonly affected is the metacarpo-phalangeal articulation of the right thumb, and the frequency of the affection in the joints of the fingers of the right hand, seems to point to female occupations as predisposing to its development. According to Menzel the presence of free tendinous bodies in the sheath do not occasion the disease not even if there is coincident contraction of the sheath. The whole phenomena of the disease seem to show that it is a circumscribed tendovaginitis with solid products of exudation. The treatment should consist of rest of affected member, if requisite by appropriate bandaging, the application of tincture of iodine, warm hand-baths and electricity. In three of Dr. Berger's cases rapid improvement was effected by the combined application of faradisation and galvanization through the corresponding metacarpo-phalangeal articulation. (*Deutsch. Zeits. f. prakt. Med.*, Nos. 7 and 8, 1875.)

Action of Apomorphia.—Dr. Walter G. Smith in his report on Materia Medica and Therapeutics, in the *Dublin Journal of Medical Science,* states that the employment of the new and potent alkaloid apomorphia, of which an account has been given in former reports, although offering some decided advantages is not without its inconveniences, and even risks, and the following observations are in point. Some months ago Dr. Perriquet of Benzeville, was led to make frequent use of hydrochlorate of apomorphia in his practice, and within a short space of time provoked vomiting by means of it in eight persons. Each time he injected 1 cgm. (0·15 gr.) of the salt dissolved in water, to the amount of two-thirds of Pravaz's syringe, and each time vomiting uniformly supervened at the end of ten, fifteen, or twenty minutes without any alarming symptoms. A ninth patient, affected with simple catarrhal sore-throat, was at first (December 1874) treated by a purgative and gargles. He went on so well that at the end of eight days he resumed work as a road labourer. Two days afterwards he had a suffocative attack, attended with moderate fever. He could scarcely open his mouth, the soft palate was red and tense, the tonsils were enormously swollen, and pus was evidently forming. 1 cgm. of hydrochlorate of apomorphia was injected under the skin of the arm, below the deltoid. At the expiration of ten minutes the patient complained of feeling a desire to sleep, but no inclination to vomit. He then suddenly threw himself backwards, flexed his arms, and uttered some hoarse cries. The lower jaw was so tightly clenched that the tongue depressor which was introduced between the teeth was twisted and it was impossible to forcibly extend the flexed forearms. The pulse was very small, there was marked coolness of the skin, and the sounds of the heart could scarcely be distinguished. In a state of complete opisthotonos the man rested on the bed, supported on the neck and heels. This state of things lasted for four or five minutes, when the patient suddenly fell back on the bed, saying, "You have caused me severe pain." In a few minutes more the rigidity disappeared, and the man sank into a deep sleep. He slept calmly for two hours, at the end of which M. Perriquet succeeded in opening a tonsillitic abscess. Three days afterwards tonsillotomy was performed, and the operation was followed by tendency to syncope. The man was not subject to epilepsy. The packets of the apomorphia salt were submitted for examination to M. Carville, who certified its excellent quality. Each packet included exactly 1 cgm. and the dose contained in the syringe was not completely dissolved. Similar alarming accidents to that just related have been observed by others, and they appear to have followed especially in those cases in which vomiting had either not been induced, or had been delayed. M. Moelder, to whom this remark is due, has related the history of a man aged sixty-three, affected with chronic gastric catarrh, who, ten minutes after injections of 5 mgm. $\frac{1}{13}$ gr. was seized with pallor of face, trembling, confusion of sight, small pulse, profuse perspiration, and inclination to sleep. At the end of twenty minutes he vomited a little; coffee was administered to counteract the somnolence. He was able to walk home in an hour and a half, and, indeed, in none of the cases have the symptoms persisted long. In Dr. Loeb's practice a young man after the injection of a solution which had been kept for some time fell into a state of asphyxia and coma. While endeavouring to draw the tongue out of the mouth Dr. Loeb provoked copious emesis, followed by an immediate subsidence of the grave symptoms. Again Dr. Prevost, of Geneva, has recorded a case (*Bull. Méd. de la Suisse Romande et Méd. Rec.*) in which he injected subcutaneously 3 or 4 mgm. of apomorphia in a woman suffering from sore-throat, with gastric disturbance. A state of collapse tending to syncope was produced, which continued for fifteen or twenty minutes, during which the pulse could scarcely be felt, and the pupils were dilated. In this instance the customary vomiting was established at the end of five minutes, and was repeated several times. The patient fell into a deep sleep, which lasted for about half an hour after the period of collapse. (*Dublin Journal of Medical Science*, Sept. 1875.)

Nutæna in the Newborn Infant.—Dr. Leopold Laudau of Breslau has published a short memoir on this subject, and the conclusions at which he has arrived are as follow:—1. Almost all the uncomplicated cases of nutæna presenting themselves in previously healthy infants are due to lesions of the gastric or intestinal mucous membrane, to wit—ulcerations of the stomach or duodenum with rupture of an artery or vein. 2. Abscesses of the stomach or of the intestine are not of intrauterine origin, and are not the consequence of fœtal gastritis. 3. These abscesses are in relation, according to the author, in opposition to the opinion of Buhl and others, with phenomena of labour, and have their source in the troubles of circulation which sometimes supervene during the period of gestation. Embolism of the affirent artery is a frequent cause. In those cases where extravasation of blood is found on the gastric and intestinal mucous membrane, it is unnecessary, in order to explain the formation of an abscess, to have recourse to the hypothesis of an embolism; we ought rather to admit it when these lesions are absent. 4. Embolism may be the result of a secondary thrombosis of the arterial canal, or of a primary thrombosis of the umbilical veins. The essential condition of its production is the obstacle to the small circulation, that is to say, to the first respiratory movement. Other pathological states—thrombosis of the duct of Botal, with its consecutive accidents, embolia in the large and small circulation (apoplexy of the abdominal organs, liver, and spleen)—are the result of these troubles. 5. Abscess of the stomach and intestines is, according to Laudois, of common occurrence in the newborn infant, especially in those that are weak and feeble, but these conditions are difficult to diagnose when there is no hemorrhage. 6. Cases of nutæna in which there is is no organic lesion result from circulatory troubles produced by disturbance of the respiration from too high pressure in the veins. The causes which hinder the respiration of newborn children are those which prevent it from being established at the moment of birth, as the aspiration of mucus, the confusion of the umbilical cord during labour. The hemorrhages in these cases almost always terminate in recovery, whilst the others are often fatal, and proceed from the great and small vessels of the stomach and intestines. 7. Lastly, the nutæna of newborn children may present a specific form and have an obscure etiology. (*Archives générale des Médecine,* Oct. 1875.)

Notes and Queries.

The Apollinaris Natural Mineral Water.—This natural mineral water has very rapidly attained a great and well-deserved popularity in this country. Its special qualities are its purity, freshness, the persistence of its effervescence, and its agreeable flavour, alone or mixed with wines or spirits. It is valuable as a dietetic table water for daily use, being far superior in flavour and quality to ordinary manufactured aërated waters, and useful in preventing gouty and dyspeptic disorders. It is we think especially suited for India and tropical countries, where purity of drinking water is of the highest importance, but is most rarely secured. The artificial aërated waters sold there are greatly to be distrusted; they are often as much polluted as ordinary drinking water, with the additional disadvantage of a frequent dash of lead poison, extracted from the machines in which they are made or the syphons in which they are sold. Aërated waters sold in syphons are indeed rarely free from lead poison. The slight alkalinity of the Apollinaris Natural Mineral Water, and its excess of natural gas, will make it particularly useful to Indians having or fearing 'a touch of the liver' and in warding off the torpid and congested conditions of the digestive organs incidental to residence in tropical climates. The water has already, we believe, achieved great popularity in South America and Batavia, and we are glad to hear that it is likely to be introduced on a large scale for the benefit of residents in our Indian empire. A large supply has been ordered, it is announced, for the use of the Prince of Wales and his suite on their Indian visit.

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⁂ Any of the foreign works may be procured on application to Messrs. Dulau, of Soho Square, W.C.;—Williams and Norgate, of Henrietta Street, Covent Garden, W.C.;—or Baillière, of King William Street, Charing Cross.

Department of Public Health.

ON SOME DIRECTIONS FOR SCIENTIFIC WORK BY MEDICAL OFFICERS OF HEALTH.

BY GEORGE BUCHANAN, M.D.,

President of the Society of Medical Officers of Health.[1]

GENTLEMEN,—The good custom of our secretaries, in presenting to us at the end of each session a review of our Society's proceedings, takes from the president one of the more customary topics for an opening address. And on the present occasion, when it is a newly-elected president who has the honour of meeting you, it is doubtless well that our thoughts should be given rather to the consideration of future work than to the retrospection of past work. For the subjects which are worthy to engage our attention are growing in number; and lines of work lie before the health officer of to-day that had not been marked out for the health officer of yesterday. Doubtless this is owing in the main to the past action of this and kindred societies; and to past studies, which, in enlarging the bounds of knowledge, have supplied us with fresh view-points for looking into the dimly-illuminated vistas before and around us. And thus it is that I make no words of apology for dispensing to-night with words of compliment to sanitary workers and with words of satisfaction with past progress. The best compliment to past explorers will be to go, as they have gone, further and deeper into sanitary questions; the most satisfaction will be gained by advance from the point we have already reached. But it may be useful, and on this occasion becoming, that I should endeavour to define a few of the directions in which medical officers of health can, while pursuing their every-day functions, render help in advancing sanitary knowledge. We now comprise among our members gentlemen who are working under every variety of circumstances in London, in large provincial towns, over large areas of England, over small districts only; each sort of circumstance presenting its own special opportunity for adding to the general stock of information. In the smaller rural districts, where the medical officer of health comes into more exact relation with his people, and where the surroundings of those people can be more precisely learnt than is possible in town districts, special opportunity is given for investigating some of those mixed pathological and etiological questions that have been the puzzle of sanitary students working (as only they have heretofore had much chance of working) among large communities. Here the officer of health has special facilities for examining the antecedents of sickness, and can record for general use and for future comparison the precise circumstances surrounding particular occurrences of disease, circumstances that may in his district be definable even in their negative aspects, and he can thus accumulate data that must help to the solution of vexed questions as to the origin and early relations of disease. The town officer of health, on the other hand, debarred by the thousandfold intricacies of town life from tracing the origin of disease in the particular instance, has the advantage of dealing with large numbers, and has his own facilities for applying statistical methods to the analysis and differentiation of the conditions that may be influencing health in his district. To all of us, whether our work lie in town or country, there come occasions when our common experience is at fault, and when we have not an answer ready to the vulgar fatalism of people round us; and these are beyond all others the occasions when exact and searching investigation may be expected to reward the officer of health, by putting him in possession of new knowledge. Already, beyond the broad classical facts of our science, a quantity of evidence on many of the obscurer points of public medicine is accumulated; and we may all add to the store.

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[1] The Inaugural Address delivered at the First Meeting of the Society for the present Session, 16th October, 1875.

Among the manifold directions in which health officers may be working, towards a better understanding of social, occupational, climatic, and other conditions, as affecting the prevalence of those diseases with which their office is particularly concerned, there is one direction which I choose for consideration to-night—first, as it is distinctively medical, and, secondly, as it lies within the opportunities of all of us. I speak of questions to which no answer, or no complete answer, has yet been given, respecting the origin and means of diffusion of the so-called zymotic diseases. Over and over again, one or other of these diseases is witnessed, arising under conditions that are not at once explicable by current notions of their production and dissemination. For a first example, let us consider some of the difficulties that we are liable to encounter in interpreting the occurrence of a disease so comparatively well understood as enteric fever. In an out-of-the-way house, looking as if isolated from all chance of infection, where there has been no previous sickness for months or years, but where a number of common nasty conditions exist, a case of this fever occurs, and the impulse of the doctor who investigates it is to say that the disease has had a *de novo* origin from the ordinary excrement filth of the place. Now whether or not this has been so is a question of the highest moment to science, but is by no means to be settled out of hand by the apparent absence of specific cause in a few instances. Repeated observations and very complete record of all circumstances are wanted before any deduction can be properly drawn from such an occurrence as I am supposing. Often room has been left in the records of such cases for doubt as to the nature of the disease in question; or an oversight on a point so demonstrably important as the period of incubation has led observers to hasty and untenable conclusions; or the possibility of dangerous material passing a long distance through a soil or along a stream may not have been held in view; or some vehicle for the conveyance of specific contagion may have been overlooked. If we consider how, a dozen years ago, before Dr. Ballard's great piece of inductive work, which our Society is proud to have among its archives, those many wonderful outbreaks of enteric fever that we now trace to the agency of milk were unintelligible, and how all of them, instead of being merely regarded as unexplained, were liable to be regarded as demonstrating *de novo* origin of the disease—we shall the better apprehend the caution with which it is necessary still to proceed before we can affirm the adequacy of any common filth condition to originate enteric fever. Even since we have known of milk, it would not until lately have occurred to many of us to suspect the baker and other food purveyors as possibly distributing fever-contagium along with their daily supplies of articles of diet. Obviously we have to be incessantly on the look-out, not only for these but for other and even obscurer vehicles for the specific poison; and there are most serious difficulties in arriving at a definite conclusion that no antecedent case has been concerned in the production of a given fever occurrence. But supposing, by exhaustive inquiry into a sufficient number of such cases, we satisfy ourselves that the fever must have had in a sense a *de novo* origin, we are only at the entrance of one of the most important problems concerning the disease. These particular houses, which have got enteric fever in them without any chance of the disease having been imported—wherein do they differ from the multitude of apparently similarly circumstanced houses that have in them no fever at all? and what are the circumstances of to-day that have produced the fever to-day and that did not produce it six months ago? Quite certainly there must be differences, or the effect would not be different. The nature of these differences is however, in such a case as I am supposing, beyond our present knowledge; and it is by the study of differentiating circumstances, in cases where we can exclude antecedent occurrence of the disease, that we may best hope to discover the nature and affinities of the special material of the fever. This much is clear, that, whether our next step be to find out means of infection-conveyance at present ill-understood or unsuspected, or whether it be to learn fresh lessons respecting the infection itself, the step may be expected to be gained by following directions of research that are peculiarly open to officers of health to follow.

Another disease that is frequently presenting the most hopeful difficulties to the sanitary student is scarlatina. In ninety-nine cases out of a hundred, doubtless its parentage and propagation are of the usual sort, by direct communication between infected persons or things and susceptible persons. Even these cases give the opportunity for observations, that are very much needed for practical purposes, as to the period of the disease when it assumes its contagious quality; as to the extent of the area of contagion; as to the circumstances influencing the retention f contagion in houses and articles of clothing, and so on; points upon which all medical practitioners may be invited to record observations. But there are other phenomena of the disease that belong to a wider field of study. The circumstances that determine the special incidence of scarlatina on the late autumn months; the conditions that determine the cohesion, so to speak, of the disease to one locality while it is easily got rid of in another; the reason why an epidemic in one place has a mortality of 4 per cent. of attacks, and in another of 40 per cent. Particularly those not very rare outbreaks that are preceded by a series of slight sore-throats would promise to reward exact inquiry into conditions of origin. And those occurrences of scarlatina where no direct source of infection can be heard of deserve particular study with reference to unknown means of spread and to possibilities of new production. Already we know of scarlatina distributed by the milkman after the same fashion that enteric fever may be spread. Already we know of dinner parties from which half the guests have carried away scarlatina. Already we have been led to think whether beyond the human economy we may not find some method of conveyance, or some fresh origin of the disease. And on these points, and other such points involving practical issues of the highest importance in our contest with this detestable disease, we are in want of further knowledge, and the officer of health again is the person who has most opportunity of acquiring such knowledge.

Or, let us consider those infectious diseases which more than others seem to be related to common non-specific inflammations: such diseases as diphtheria and erysipelas. Even in an immediate practical view, I may appeal to the interests of vaccination as liable to be compromised by our ignorance of the mode of generation and of the exact conditions of the spread of erysipelas; and I may illustrate the use that we could make of a better knowledge of this disease by the greater power we should acquire for preventing the misfortunes of lying-in rooms and hospitals: while, as regards the more general aspects of such disease, any of us who have met with diphtheria or erysipelas in the course of our sanitary work must have become conscious of how sanitary action is hindered by the behaviour of these complaints being ill-understood. Here the officer of health of a small community has advantage over his colleague in a large town. He may make exhaustive inquiry into the circumstances of such disease as this when he finds it occurring for the first time among people presumably not exposed to any previous infection. Perhaps he will at first learn nothing to help him in any administrative way, and may see little more reason for interesting his office in these diseases than in so many cases of brain or heart disease. But he may have good hope that as records of such inquiries accumulate, they may lead to an advance in pathological knowledge: an advance which in its turn may give a new power of applying preventive measures.

And so of other diseases, the health officer may bring his distinctively medical knowledge to the elucidation of doubtful points or the discovery of new facts; and the more interest he takes in the scientific aspects of his office, the more will other medical practitioners come to take interest in the investigation of problems of causation and in means for the prevention of disease; and thus the health officer may gain the whole profession for his fellow-workers. Observe what medical science, and especially sanitary science, would gain if all practitioners, instead of merely prescribing for their patients, were to concern themselves heartily with the natural history of disease. How much earlier inquiry can be made by the family doctor than by any health officer, and with what correspondingly greater chance of getting at facts of etiology. What much better opportunity he has of checking the exact truth of people's beliefs; and, again, of influencing them in ways beyond the sphere of official rules to proper courses of sanitary action. How long, with such assistance as he could give, would there remain any doubtful questions on such a matter, for example, as the duration of an incubation period? What light might he not throw on the nature of those diseases, such as lobar pneumonia, that in their definite course and tendency to crisis show obscure similarities to diseases of the "zymotic" class? All practitioners ready to make use of their every-day opportunities for the investigation of points like these should find in the medical officer of health of their district the most friendly and competent adviser; and in the organisation that shall see the health officer working, with the cordial assistance of his professional brethren towards a scientific understanding of problems of pathology and etiology, will be found the best consolation that the medical officer of health can have for any inability to enlighten vestrymen and boards of guardians.

I propose, in continuation of this address, to illustrate the argument I have been advancing by dwelling on one particular topic that will probably have more interest than another for those present to-night, since it especially concerns health officers who have charge of great town communities. I refer to the prevalence of summer diarrhœa, and to our singular ignorance of its causes and of the action to be taken for its prevention. We have here a disease that in a few weeks of summer, in the great towns of England, regularly every year sweeps off many thousands of lives: about which, I will venture to say, no thoughtful person has information that satisfies himself, and which the health officer has certainly the best opportunities of studying. We have learned concerning it that a large part is related to conditions of excremental filth during hot weather, and this knowledge, obviously insufficient to account for all the phenomena of the disease, seems to have been taken by many people as a final conclusion, which, if it will not explain everything, at all events represents all that is necessary to be known for administrative purposes. Such other diarrhœa as is fatal in the summer, may, it is vaguely said, be set down to social and occupational conditions, over which but little direct control can be exercised. Except for general evidence on certain relations of the disease to heat and excrement, sanitary literature is curiously silent on the natural history of this most fatal complaint. Let us consider some of the points upon which more information is wanted.

First: is it or is it not true that summer diarrhœa is now a much more fatal complaint than formerly? We know that in old records there is no mention of the disease prevailing on any extensive scale; but this has been regarded as a mere omission of record, and the belief is generally entertained that if we could apply modern observation to the diseases of old times, and modern nosological terms to old bills of mortality, diarrhœa would be found to have been as fatal a disease in former times as now. But is this true? I have tried by some very imperfect tests to see what grounds there are for the opinion. I do not profess to have come to any kind of conclusion, and I merely submit to you such results as I have obtained as being suggestive of the directions that completer inquiry may well take for getting an answer to the question. On the one hand, we find in old bills of mortality a number of deaths from "convulsions," amounting year by year to double the actual number of deaths ascribed to that cause in present London with its enormously larger population, and constituting, with deaths from "teething," "vomiting," and "flux," about 30 per cent. of the total mortality; whereas in the London of to-day only 10 per cent. of the total deaths are registered under the heads of these death-causes, diarrhœa included. So, as far as this consideration goes, it may well be that all the mortality we now find recorded as from diarrhœa existed in old times, though it was set down in bills of mortality under other names. But to this it may be objected that, until we have some evidence that the deaths formerly ascribed to "convulsions" and the like had an incidence upon age and season similar to the incidence now observed for diarrhœa, we are not justified in concluding offhand that the old name convulsions and the new name diarrhœa are to any large extent convertible terms. I have therefore submitted some bills of mortality to another kind of test, with the result (so far as the imperfection of the test allows of any result) of making doubtful whether there was at the beginning of the present century any particular mortality of the sort we now witness among infants at diarrhœal times of year. We know that at present, even in the least diarrhœal seasons, the mortality from all causes in early August never fails to be raised above the mean mortality of the year, and the infantile mortality of the season to be raised greatly above the mean of the year, essentially from the prevalence of this one complaint. Now if we have not facts about "diarrhœa" by name in old records, we have at all events facts, or what seem to be such, as to gross mortality and as to infantile mortality, week by week, to be found in bills of mortality. I have taken the London bills of the year 1808-9 (happening to possess a copy of them for that particular year), and have compared the then weekly mortality with that of 1874, the two years resembling each other in having a lower death-rate than that of neighbouring years, both among children and older people. As we may be sure was the case, 1874 mortality, examined in small groups of weeks, shows a distinct rise at the beginning of August, bringing the deaths at all ages above the mean rate of the year. When we look at the infantile deaths this is more strikingly shown, by far the highest weekly mortality from all causes among children having occurred at the end of July and beginning of August; and this mortality, we know, was brought about by epidemic diarrhœa. But when we examine the deaths of 1809 week by week, the all-age mortality of early August, although it has a slight rise in it, does not come near to the mean mortality of other seasons of the year; and when we examine the infantile mortality separately, that again is nothing near so high as at most other seasons. Where, then, was the diarrhœa of July and August 1809? It is obviously important to us to have a knowledge of the real prevalence of diarrhœa, not for one year only, but for several years at the beginning of the century and now. For we are probably cleaner than our ancestors, and London is probably freer from excremental abominations now than when George the Third was king. And so far as this is true, the reason for our increased suffering from summer diarrhœa will have to be sought elsewhere than in excremental filth, or else in such filth acting under conditions that are newly developed in the community.

Again: is it or is it not the fact that summer diarrhœa is fatal almost wholly among infants of a very few months of age, and that there is practically none of it in children over one year old? And first as regards the fatal disease, it is surprising that there should be any difficulty in getting exact data for answering this question; but, as matter of fact, there is almost no information to be had respecting it from published mortality returns. The Registrars-General, in stating the incidence of various causes of death upon various ages, have made no division of the period under five years. Such information as is to be had comes, therefore, by induction from such secondary evidence as the death-registers give, or it comes from local records that have been analysed for this purpose with greater nicety than the records of the entire kingdom. A specimen of the latter—relating, it is true, to one year only, and not separating ages at death more particularly than as they are within or beyond the first twelvemonth of life—has been given me by Dr. Whitmore; and from this it is seen that, both in epidemic and in non-epidemic months, the incidence of fatal diarrhœa is so vastly in excess upon infants under one, that the mortality of the disease at other ages may be almost disregarded. An example of ingenious deduction, applied in the detection of the same fact from the returns of our Registrar-General, is furnished by the writers of a recent paper in the *Scottish Meteorological Journal;* and the induction here is based upon the returns of ten years for the whole population of London. I have tested these writers' method by applying it to the facts of one year; and I consider that they show quite satisfactorily that the vast increase of the general death-rate by diarrhœa in July and August is almost wholly by diarrhœa among infants under one year of age. We, who have worked with the weekly sheets of the London registers, shall probably want little assurance of this fact. But observe now how we are left in uncertainty as to the facts for non-fatal diarrhœa, and how we are balked by this uncertainty in approaching further lines of argument for the investigation of the cause of the disease. We want much at this stage to know how far death-registers are to be trusted to show differences according to age, in the incidence of *attacks* non-fatal and fatal together—whether the varying incidence according to age, exhibited by the death-registers, may not in truth signify great differences in the *fatality* of diarrhœa, but no great difference in the *number of attacks,* among infants on the one hand, and older children and adults on the other. We have here, then, respecting the age distribution of diarrhœa, questions which those who are in a position to analyse death-registers and the records of non-fatal sickness may most usefully apply themselves to answer.

For, thirdly, to whatever extent summer diarrhœa attacks babyhood and spares later childhood, its causes must be sought in conditions which affect babyhood in a peculiar degree, and affect older children to a less degree. Now, though we are much in want of complete statistics, enough have been put on record to make us sure that diarrhœa generally has a special tendency to attack infants; and the writers of the paper to which I adverted in the *Scottish Meteorological Journal* are evidently disposed to think that if we had the whole facts we should find that the special incidence of fatal diarrhœa upon young infants was most special at the epidemic period of the year. It is enough for my present purpose that summer diarrhœa, like other diarrhœas, finds incomparably its largest number of victims in infants under one year old. But when we come to inquire what coincident conditions special to children under one year old, and of a nature to cause diarrhœa among them, exist specially in the two months of July and August, we find ourselves very far from having accurate knowledge. So far as heat and excremental conditions go, the means by which they bring about diarrhœa in young babies, and do not bring it about in their brothers and sisters born a year before them, are not at all easy to understand. We are continually reminded by disbelievers in our work of other conditions, peculiar to babyhood, over which health authorities have not direct control; so that we have practical reason for scientific curiosity as to the limits of those conditions, and for making sure that no unwarranted importance is attached to them. Detailed inquiry then is wanted, and is wanted on a large scale, in a variety of places, over a number of years, and in respect of non-fatal diarrhœa as well as of the fatal disease, into the surroundings of children attacked by summer diarrhœa. Among the very few inquiries of the sort yet on record, one by Dr. Crane of Leicester is a noteworthy instance of failure to bring the causes of this disease into harmony with ordinary views of its production. He inquired as to the circumstances of 283 children dying of diarrhœa in the summer of 1873; and found that of these, 256 had been living in houses not in bad sanitary condition; 201 of them had been in charge of their own mothers by day and night; 107 of them had been wholly suckled, 98 others partially suckled, and only 78 had been fed on the bottle alone. Whether or not these proportions indicate that the children who died of diarrhœa were differently circumstanced to other children in Leicester who did not die of diarrhœa, Dr. Crane does not inform us; but obviously, so far as this particular inquiry went, there is no indication that neglect by mothers, and bad feeding, which many people would offer as sufficient explanation of summer diarrhœa, played even a conspicuous part in the mortality from that disease in 1873 in Leicester.

Fourthly, a line of inquiry that suggests itself, with apparent promise of some knowledge of the means by which heat and filth may operate, and of the limits of the operation of such causes, is into the distribution, actual and comparative, of other diseases that are known to be intimately associated with excremental conditions. Particularly the distribution of enteric fever is worth investigating in this regard. Of excrement in its relations to this disease we now know more than we did, and comparison of the behaviour of this fever with the behaviour of diarrhœa, under various circumstances of place and time, may possibly throw some light on the relations of excrement to diarrhœa, or suggest some directions for further investigation. It has long been known that the two diseases differ in their local distribution, and this fact was not intelligible while common non-specific filth conditions were regarded as sufficing for the production of fever. Now that we have reason to consider the maintenance and spread of enteric fever among communities as being due rather to some self-propagating element in excrement than to mere decomposing excrement as such, and that element to be peculiar to the specific fever, we can understand why a different disease should not, however it may be also related to excremental filth, exhibit any constant coincidence with the fever. Still, excrement is in question for both diseases, and experience has shown that the prevalence of enteric fever forms some kind of index to the prevalence of excremental nuisances as such; and a general similarity might be expected between the distribution of enteric fever and of such diarrhœa as is dependent for its production upon filth conditions. If the degree of difference between the distribution of fever on the one hand and diarrhœa on the other should prove to be great, we shall apparently have reason for considering either that a large part of diarrhœa is not of excremental origin, or that the element of excrement that is productive of diarrhœa is (like the material of enteric fever itself) something narrower in its distribution than the totality of decomposing excrement, something, in fact, specific to the diarrhœa, and operative under other conditions than those which are required for the operation of the fever-element. Let us, at least, see what are the facts of the case; and by way of illustration, let me adduce a few *primâ facie* results of inquiry. Arranging, first, the several divisions of England in the order in which "fever" (the great bulk of which was enteric fever) was fatal in them during ten years; and putting on the same sheet the mortality of each division from diarrhœa, no visible relation appears between the mortality of the several divisions by the one and the other disease. Again, taking out from statistical returns, districts with high or low fever rates, and examining the same districts as to their diarrhœa rates, little or no parallelism in the incidence of the two diseases can be found. Or, making a list of the twenty-five registration districts of England that in 1851-60 had most fever, and another list of the twenty-five that in the same period suffered most from diarrhœa, only one name appears on both lists. The fever districts are seen to be essentially rural or small town districts, the diarrhœa districts to be large towns, most of them manufacturing towns. It would seem then that there does in fact arise the consideration to which I have referred, and we want to know which alternative to accept: whether much epidemic diarrhœa is non-excremental in origin; or whether, being excremental, it depends on some specific element contained in excrement. Evidently nothing but very exact search into the conditions of diarrhœa production in each case—search as exact as if it were being made for enteric fever itself, and into every obscure circumstance of diarrhœa occurrence—will help us towards an answer to this question. And this research can be made by no one so well as by a medical practitioner having the experience and opportunities of a health officer.

There do, in effect, appear to be a number of indications, severally not as yet very definite, that infantile diarrhœa, and particularly the form of disease epidemic in the summer, may be a specific disease in the broad sense of the word specific. All evidence that we can obtain about the behaviour of the disease will deserve to be examined from this point of view. We can as yet form no guess as to the nature of the specific element, though we may expect that the degree of its operation is determined by the intensity of some condition of organic foulness. But it may be that such an element, if it exist, would be single, although in one case associated with fæcal matters, and in another case not associated with what we commonly speak of as excrement.

In the last of these points which I intend to submit for your consideration, we shall find one of the indications I have mentioned. It is as follows:—Some health officers, in despair of more exactly understanding the disease we are considering, have tried to satisfy themselves by referring it altogether to the direct effects of "heat" upon infants. To speak of heat in this way is much as if one should speak of Providence as responsible for an effect. It is true that, when we observe the greater fatality of diarrhœa in hot summers than in cool summers, we can hardly doubt that in July and August heat is in some way a condition precedent of the result; but the very question that practically concerns the officer of health is as to the manner in which the heat operates. It must require some intermediate secondary condition or conditions in order to produce diarrhœa, or we should have diarrhœa equally spread wherever there was equal heat; and we know that this is not so. Now, examining as narrowly as we may this question of the direct influence of heat, we may observe some facts that are difficult to account for, and the further investigation of which may turn out to reward the student. Not only fatal diarrhœa, as shown by the Registrar-General, but also non-fatal diarrhœa, so far as the best sickness records with which I am acquainted (those published seven years ago by Dr. Ballard) give evidence on the point, is not epidemic before July, whatever may have been the heat of the weather. The months of May and June, it would seem, may have a week of average temperature as high as 60°, 64°, or even higher, and yet no particular consequent increase of diarrhœa be observable. And similarly, the prevalence of the disease would hardly seem to be affected by high temperatures occurring later than August. In September a rise of temperature up to a weekly mean of 60°, or even to 65°, is not accompanied by any corresponding rise in the amount of fatal diarrhœa. On this point the sickness records that I have consulted do not give uniform evidence, and their evidence is not uniformly to the same purpose as that of the death registers; and further exact sickness records are obviously wanted. Still the fact of there being a distinct difference between the operation of September heat and July-August heat in the production of diarrhœa is a consideration which, even as it stands, deserves further study. Its significance would appear to be this: that in so far as summer diarrhœa should turn out to be a function, not of heat as such, but of heat acting essentially at a particular period of the year, countenance would be given to the notion that heat operates by developing some peculiar disease-material, whether in excrement or elsewhere, that has its time of multiplication essentially in July and August; that, in effect, the materies of epidemic diarrhœa may be something quite special to the disease, propagating itself at a particular time of year as certainly as plants flower or insects multiply at a particular season. I have no disposition to speculate on such a thing, nor on the nature of those conditions of foulness that would probably be wanted for the growth and multiplication of such a specific materies. What we shall all agree in demanding in regard to the present as to other points that I have submitted to you, is the collection of more information on the whole subject of "diarrhœa;" in confidence that every increment of knowledge will give us an increased ability to apply means of repression to this serious disease which cannot fail to be regarded by health officers of large towns as one of the opprobria of their districts.

I have now said enough in illustration of various lines of observation which may profitably be followed by medical practitioners seeking to promote sanitary knowledge, and notably by medical officers of health. In helping to answer the many intricate questions of which I have now indicated a few, we may expect to achieve a better comprehension of various points of pathology as well as a better grasp of those principles that must guide us in our direct action for the prevention of disease.

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THE USE OF SACCHARATED LIME IN TYPHUS FEVER AND OTHER COMPLAINTS.

BY PROFESSOR CLELAND, M.D., F.R.S., GALWAY.

IT is now eighteen years since, in the pages of the *Edinburgh Medical Journal*, I called the attention of the profession to the medicinal properties of saccharated lime. I am led to understand that I was not the first to do so, and that it had been previously recommended by Dr. Capitaine. But I have often been struck with the utter misconception of the properties of this substance, which is prevalent in the profession, and prevents its being used so much as it should be, even in these days, when it is pharmacopœial; and I wish also in a very few words to mention the advantages of its use in fevers. The two points most necessary to insist on in the administration of this remedy are probably large doses and copious dilution. A teaspoonful of the pharmacopœial "liquor," given after meals, is necessary, in most cases, to develop its effects as a stomachic, and should be diluted in three or four ounces of water; but in cases in which there is foulness of the tongue from acute causes, much the best plan is to fill a tumbler with water, introduce as much of the solution of lime as can be added without giving a very disagreeable taste, and let the patient drink of the mixture *ad libitum*; and when one tumbler is finished let another be filled. Generally, I believe, in most cases in which there is great foulness of the tongue, this treatment will be found most advantageous. It is not suitable, however, when there is inflammation of the stomach, or great irritability indicated, for example, by central redness of the tongue, with sharp ragged edges. Attacks of bilious or gouty diarrhœa and British cholera yield with great rapidity to the free use of saccharated lime, and it is found exceedingly grateful by the patient on account of its alleviating the dry uncomfortable feeling in his mouth. It produces usually copious diuresis, a gentle perspiration, and relief from tormina, while the violence of the action of the bowels is quickly mitigated. There is never, however, the slightest constipation produced, the action of saccharated lime being slightly aperient, and even in some persons markedly so.

In fever, I do not claim any specific virtue for this remedy. Its action is in great part intelligible, and requires merely to be mentioned, I imagine, to commend itself to the profession as being highly advantageous. In many instances I have had occasion to observe that when an hospital patient had a black, parched, and cracked tongue, like a cinder, with the teeth and lips black with sordes, saccharated lime being administered freely, the tongue was moist the following day, and in a few days the black crust had entirely loosened and disappeared. The cases to which I allude have all been cases of typhus, no typhoid cases having come into the Galway Fever Hospital during the past year, nor for some time previously. In these circumstances, although I have tried saccharated lime in typhoid fever, I am not prepared to make any statement with reference to its utility in that particular disease; but in any case of black parched tongue, no matter what the disease, I should rely on its effects. It is even beneficial where that symptom exists from urinary causes. In typhus it has become my habit to give the lime in milk, instead of water. Given in this way it has the advantage of preventing that peculiar sensation in the mouth which is liable to follow the drinking of milk, and make it unsuitable for quenching thirst. Thus the patient is induced to take a certain amount of mild nutriment when he is most prostrate. It can scarcely be doubted that to this circumstance, as well as to the improvement in the whole length of the alimentary canal, indicated by the effect on the tongue, the benefits which I have observed to follow the free use of saccharated lime are to be imputed. I do not pretend to see a large number of cases; but those which I have seen have been sufficient to justify these remarks. Within the last year, of sixteen females admitted to hospital, suffering from typhus, and treated by me, only one died; and that one case is rather an example of the efficacy of the remedy of which I speak, than the reverse; for she was an aged woman with her tongue parched and blackened to a cinder, and within a few days of the fever running its course when she was admitted; yet she speedily revived, and when at last she succumbed, after several weeks, it was under the effects of exceedingly extensive bedsores, which had commenced before her admission, and affected the pubis, nates, and both hips. In no case do I impute to the saccharated lime effects which might rather be considered due to stimulants; for, though convinced of the necessity of the latter in moderation, in hospital cases I have probably never ordered more than six ounces of wine, and four ounces of spirits *per diem*, and very rarely so much.

CLINICAL LECTURE ON A CASE OF CATARACT EXTRACTION.

BY CHARLES BELL TAYLOR, M.D., F.R.C.S.E.

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(*Continued from* p. 344.)

Having decided upon associating an iridectomy with the operation of extraction for cataract, the question arises, shall we do iridectomy now and extract later, or shall we remove the lens and a portion of iris at one and the same time? I should certainly much prefer to make the iridectomy a separate operation, and extract some weeks hence when all trace of the operation, such as haziness of the cornea at the site of the wound, or congestion of the neighbouring tissues, had passed away. By adopting this course we obtain much valuable information as to the probable conduct of the patient when submitted to the major operation. We ascertain how anæsthetics are borne; whether they occasion much vomiting, struggling, or excessive congestion; or whether the patient has sufficient steadiness to bear the operation without anæthetics: and it is clear that we may utilise the experience thus obtained to the benefit of both patient and operator when extracting at a later date. The formation of an artificial pupil is in itself but a trifling operation; and a subsequent extraction, when the parts have quite recovered, is much simplified by the previous removal of a small portion of the iris: whereas if the iridectomy is made a part of the operation we have a fresh wound of the iris, corresponding in size to the margin of the coloboma, in addition to the one made in the cornea for extraction; in fact the amount of traumatism, or actual injury, at the time of operation is increased, and it was formerly considered nothing less than a disaster to accidentally slice a piece of iris while doing an extraction. The excision of a portion of iris which follows the first incision is also often accompanied by a gush of blood which fills the anterior chamber, and obscures the subsequent steps of the operation. The raw edges of the recently wounded iris are apt to be contused during the passage of the lens, and if consequently inflamed, they will often adhere to any remaining portions of the capsule, and contribute to the formation of a secondary cataract. Certainly a preliminary iridectomy is for many reasons the safest procedure. Mooren, of Düsseldorf, to whom we are indebted for the suggestion, operated thus in 62 exceptionally unfavourable cases with two failures only; and some years ago I published an account of 100 similar cases, treated by the same method, with equally good results. But there are unfortunately insuperable objections to Mooren's method which are well illustrated by the case now under consideration. This patient, for instance, cannot afford to stay here for eight weeks; if we do an iridectomy and send her home, she will conclude, so soon as she finds that her sight is not improved, that the operation has been a failure—an opinion that is sure to be loudly endorsed by numerous acquaintances. She would be horrified at the idea of a second operation in the face of such a failure, and we should probably never see her again, even if she were in a position to incur the expense. We must therefore do the best we can under the circumstances, and proceed to extract, making the iridectomy a part of the operation. Shall we do so by the upper or lower section? By the upper section the coloboma iridis is in many patients concealed by the upper lid; and there is evidence to show that the process of healing is to some slight but not very important extent facilitated by this position of the wound. These are the arguments which are used in favour of the upper section; and some of our best operators, notably Mr. Streatfield of Moorfields, invariably adopt it; but if suppuration should occur, and suppuration is imminent in this case, the downward gravitation of pus and other inflammatory products will form a most unfavourable feature in the subsequent progress of the case. The eye is always turned pretty firmly upwards during anæsthesia, and involuntarily, without anæsthetics, by the patient; to turn it downwards with forceps in order to expose the upper segment of the cornea involves the use of a speculum, and is attended with some risk of rupture of the hyaloid membrane, and immediate loss of the eye. The upward tendency of the eyeball, and the downward gravitation of inflammatory products are, on the contrary, rather fortunate incidents if the lower section be adopted; and although I have operated successfully in a large number of cases by the upper section, I think there can be no question that the lens, the capsule, and remnants of cortex are much more easily extruded through an inferior incision: and, contrary to the generally received notion, I have convinced myself that the inconvenience from a coloboma in this situation, especially if it be a small one, is not in excess of one made directly upwards, while the sight is equally good, if not better; this is no doubt owing to the fact that the downward position of the eyeball when reading, or gazing at an object, while exposing an upward iridectomy brings the one made downwards under the protection of the lower lid. We shall therefore extract by the lower section, and make the iridectomy a part of the operation. With regard to operating upon both eyes at once, of course it is better to do one at a time; but here again we are often driven by the patient's mental condition, or domestic circumstances, to do that which, if not absolutely the best, is the best under the circumstances. For instance, if I operate upon one eye of this patient, and succeed, she will hardly be inclined to risk the other: if I fail she will be too discouraged to do so; so that I think it will be well to multiply our chances of success by a double venture.

The only question remaining to be considered before we proceed to operation has reference to the employment of anæsthetics. I should much prefer to dispense with anæsthetics in the operation of extraction, on account of the vomiting, congestion, and struggling which they often occasion; but there are many cases, and this is one of them, where the patient's want of self-control is such as to preclude the possibility of operating without first inducing insensibility. If it were not for vomiting there would be but slight objection to the use of anæsthetics, and vomiting ceases to be of much consequence if a piece of iris has been removed, although the repeated straining is very apt to occasion prolapse if the pupil has been left entire. What anæsthetic shall we employ? Nitrous oxide is safe, and scarcely ever causes vomiting, but it occasions struggling, spasm, and a kind of epileptic condition, so that insensibility can seldom be conveniently maintained until the operation is completed: chloroform, bichloride of methylene, and methylene ether are pleasant to inhale, but they all cause vomiting,—that from chloroform sometimes lasting for twenty-four hours,—while the patient is with each of them exposed to the risk of fatal syncope, or death beginning at the heart. Ether is the only available anæsthetic, with which I am acquainted, that is free from this special risk: this constitutes the real superiority of ether as an anæsthetic, and therefore, although it is in most other respects inferior to the three last which I have named, we shall employ it in this case.

Ether was then administered by Dr. Morris, and the operation completed by Dr. Taylor, by the downward section, with iridectomy on the left eye. Towards the close of the operation the breathing became much embarrassed, and the face very blue and congested; this was due, no doubt, in great measure to the enlarged thyroid, and the imperfect condition of the heart apparatus; and also, in a less degree, to the excessive secretion in the bronchial tubes, which is so frequently a result of the administration of the ether. Considering the patient's very feeble condition, Dr. Morris did not think it safe to prolong the anæsthesia until the second eye could be operated on, and the original intention was therefore not carried out. For the first two days there was considerable swelling of the lids, and suppuration seemed imminent; but the careful application of hot compresses with a firm bandage, thrice daily, sufficed to alleviate this condition, and on the fourth day the patient was sufficiently recovered to undergo extraction of cataract from the right eye, an operation which was completed without misadventure, and the patient returned home in a fortnight with good sight in both eyes. Since then she has been supplied with glasses; and can now read brilliant type with facility, and has most excellent distant vision.

Remarks after Operation.—As predicted, the eyeballs on both occasions collapsed and the cornea fell inwards the moment the aqueous humour escaped; and although the incision did not comprise more than one-third of the cornea there was some retraction of the edges of the wound,—a malposition which was, however, remedied by slight pressure with the forefinger on the upper lid.

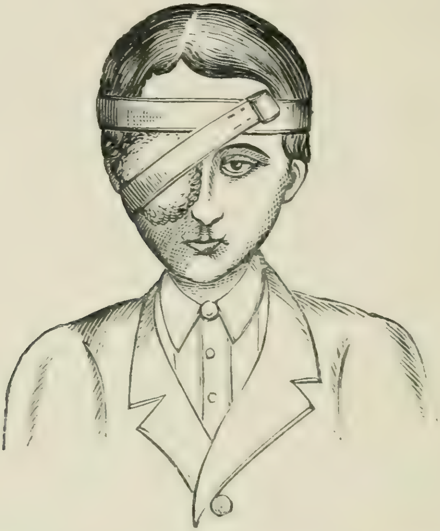
Had one half of the cornea been converted into a flap, as in Daviell's operation, the retraction would necessarily have been much greater, and the danger of ill consequences considerably augmented. Indeed I think we may fairly attribute much of the fatality which attended the old flap operation to the size of the wound; and it is strange that, during all the years in which that operation was exclusively practised, the fact that the lens may be readily extruded through a much smaller though similar incision, should not have attracted notice until a comparatively recent date.

The form of incision adopted in this case is one which I suggested in 1865, before Von Græfe's linear operation had been introduced into this country; and illustrated by a woodcut in 1868 in a paper published in the *Edinburgh Medical Journal.* At first I was in the habit of associating the operation with an iridectomy, but afterwards the iridectomy was dispensed with in favourable cases; and latterly, for reasons already given, I have adopted the lower form of incision. The patient was very feeble, in fact could hardly speak above a whisper for some days after the first operation; colliquative diarrhœa also came on, and it was necessary to administer stimulants pretty freely. We had difficulty in getting consent for the second operation; and if the extraction had been deferred no doubt the patient would have returned with one eye only. I think there can be little doubt that the successful result was owing, in a great measure, to the iridectomy; for if prolapse, or inflammation of the iris had occurred, the patient's condition was such that the eye would, so far as we can judge, have been lost.

You may well say, if iridectomy is so valuable a resource why not resort to it in every case of extraction? The answer is simply this:—"It has its disadvantages, and is not always necessary; a patient with a large artificial pupil, and no power of accommodation, is apt to suffer from dazzling cosmetic defect, and other inconveniences, which although to be regarded lightly, —considering the paramount importance of restoring light, are, nevertheless, defects which we ought to avoid in all favourable, or even average cases. It would be quite superfluous to remove a portion of iris in moderately healthy patients, with mature cataracts, and in cases where the operation has been completed without misadventure; however desirable it may be to do so in those where these conditions do not exist. In numerous recent cases I have extracted with the same form of incision without mutilating the pupil, and the results have been most brilliant, some of the patients declaring that they saw with glasses not only as well but even better than ever in their lives before; and we can readily understand that, in the absence of other defects, a perfect crystal may more than compensate for the absence of a natural lens which perhaps was never a very brilliant one: in fact there can be no doubt that the iris plays a most important part after extraction; regulating the amount of light admitted to the eye, correcting the aberration occasioned by sphericity of the cornea, diminishing irregular circles of diffusion; contributing to the clearness of excentric vision, and thus after extraction compensating largely for the absence of the lens. The great danger if we extract without iridectomy is prolapse of the iris. This risk is however much diminished by the instillation of a solution of esserine, or calabar bean, immediately after the operation. Some surgeons hesitate to employ this agent on the ground that if iritis should occur we should have the unfavourable complication of iritis plus a contracted pupil, but in point of fact primary iritis does not come on until the third or fourth day, not until the wound made for extraction has, in the great majority of cases, healed; and the effect of calabar bean may then, if necessary, be completely neutralised and overcome by the instillation of atropine.

With regard to the after-treatment, if all has gone well with the operation, but little after-treatment is required. A lady, herself a physician, on whom I operated without iridectomy at Malvern this summer, writes, in a published account of her case, "I was only excluded from light forty-eight hours, and I saw my patients, as usual, on the fourth day. In a week I went to church, with my eyes fully exposed, in a bright sun. My sight was never so good as now. I read and write for hours with no disagreeable feeling in my eyes; they are in all respects as serviceable as in my youth."

I should, however, as a rule keep the eyes bound up for a week, and confine the patient to a couch for three or four days. I find the best dressing is a little cotton wool, fine charpie, or French wadding, dipped in a solution of chloral hydrate: this disinfects any secretion which may accumulate between the lids, or rather prevents the decomposition which might prove the starting point for suppuration of the wound. The wool is best retained *in situ* by one turn of a domett bandage pinned over the forehead so as to afford slight support to the eye, and thus maintain the edges of the wound in apposition.



This is readily unpinned and turned back, without disturbing the patient, whenever it is necessary to inspect the eye or change the dressing. About eight hours after the operation the edges of the lids should be gently sponged with an antiseptic lotion, just barely separated, and any slight secretion removed. As a rule patients do not have any pain, but if pain should come on after operation it is always a serious symptom, and should be combated *ab initio*. If accompanied by a full pulse, swollen lids, and coated tongue I generally take blood from the arm, or foot, to the amount of four ounces, or more if the patient will bear it, and administer a calomel purge, with a subcutaneous injection of morphia, and apply a compress bandage, with hot fomentations. This was Von Græfe's practice, who assured me, when I attended his clinique in Berlin, that he had learned, by sad experience, never to employ leeches or abstract blood from the immediate vicinity of the eyeball for the first three days after an extraction. In a recent case in which I adopted this treatment, the eye was saved and the patient has now excellent sight, although suppuration had actually set in. After thirty hours the danger of suppuration has, as a rule, passed by, and after the third day any pain the patient may suffer is probably due to primary iritis, which may be detected on inspection, and which is best treated by atropine, morphia, blue pill, and the application of four leeches to the temple, a fresh one being added as fast as one drops off, until the pain is gone. It is very seldom that we shall have to resort to these measures, but it is a good rule not to be afraid of applying leeches after the third day; they can do no harm in an ordinary case, and an insidious form of iritis is often developed with but few symptoms during the first few days after an extraction, which I generally recognise by a dull, indefinable sensation (patients hardly call it pain) in the head and which is immediately relieved by the abstraction of blood. It is still more rare for patients to suffer total loss of the eye; I have performed 100 extractions with the loss of six eyes only (*i.e.* totally lost), and other surgeons are equally or more successful. These results are greatly due to the labours of the late Von Græfe, Mooren, Jacobson, and other continental surgeons; as also to those of our distinguished countrymen Professors Bowman, Critchett, and others, who have taught us not only how to select the suitable operation for each case, but also the best means of avoiding those disasters which formerly entailed total loss of vision.

TWO CASES OF NEURALGIA TREATED WITH CHLORIDE OF AMMONIUM.

BY DAVID YOUNG, M.D., FLORENCE.

THE following two cases of neuralgia—one of the right ovary, and the other of the fifth pair—present several points of interest, and illustrate the value of the ammonium chloride in the treatment of these affections.

I. *Neuralgia of the right ovary of sixteen years' standing.*

Madame P., aged 37, widow, consulted me in January last. She gave the following history:—Married at nineteen; had three children, the youngest being sixteen—last confinement difficult and prolonged, but child born naturally. One month after she was seized with severe pain over the right ovary, which lasted three days. A fortnight later the menses appeared, and fourteen days after their cessation the pain returned in the old spot and continued about the same length of time.

For sixteen years matters went on in the same way. The monthly periods were regular and the discharge normal in quantity and duration. The pain came on invariably between the thirteenth and fourteenth day after the menstrual period had ceased, and lasted from forty-eight to seventy-two hours. Sometimes the pain was not severe, but at other times so intense that it seemed, to use the words of Madame P., "like having a difficult confinement every month."

On examination the uterus was healthy and slightly anteverted; the right ovary was swollen and tender, and when examined per rectum was exceedingly painful. When I first saw the patient the pain had lasted about two days. I placed a pessary containing potass. bromid. gr. x. and ext. belladonna gr. ½ in the posterior *cul de sac*, and ordered fifteen grains of the chloride of ammonium every two hours till three doses were taken. Next morning the patient was free from pain and had slept well. Nothing further was done till after the next period. I now used a pessary containing potass. bromid. gr. x. and ext. belladonna gr. ¼ every second night, placing it in the same position as before, and ordered fifteen grains of the chloride to be taken at eight, nine, and ten o'clock every night. The dreaded fourteenth day came, and with it only a very slight pain.

The above treatment was continued for two months longer, although the pain had not returned, and since then she has been perfectly well. After each monthly period during the course of the treatment there was slight tenderness, or rather uncomfortableness, in the region of the ovary, which was relieved by the pessaries, and therefore I continued to use them every other night while the patient was taking the chloride.

II. *Neuralgia of the ophthalmic and superior maxillary branches of the fifth pair.*

Madame Van C., a widow lady, aged 50, awoke about three in the morning with severe pain over the left eyebrow and shooting down the cheek to the nose. Thirty years previously she had neuralgia on the other side of the face, which was cured by large doses of quinine. The present attack had lasted two days before I saw her, and I found her suffering intensely, and exhausted from want of sleep. I ordered five grains of citrate of quinine every two hours till she had taken thirty grains, which caused great headache, but no cessation of the pain.

On each occasion the pain set in with great severity between three and four in the morning, continued till about ten o'clock, and then gradually diminished till it finally ceased, about midday.

On the evening of the fifth day from the commencement of the attack the chloride was given in ten-grain doses every hour, from six P.M. till midnight, with the following interesting and satisfactory results:—

6th day,	pain came on	3.30 A.M.	Ceased	one o'clock.
7th day,	„	4.0 A.M.	„	one o'clock.
8th day,	„	5.0 A.M.		noon.
9th day,	„	6.0 A.M.	„	noon.

10th day,	pain came on	7.0 A.M.	Ceased at noon.
11th day,	„	8.0 A.M.	„ a little before noon.
12th day,	„	9.0 A.M.	„ noon.
13th day,	„	10.0 A.M.	„ noon.
14th day,	„	11.0 A.M.	„ noon.

On the 15th day, the attack began about 11.30 and continued for an hour with more severity than on any previous occasion, and subsided a little before one o'clock. The chloride was continued for three days longer, and till the time when my patient left Florence, six months after the beginning of the attack. She had had no further trouble.

NOTE I.—The chloride, if given in larger doses than fifteen grains, is apt to cause nausea, and in some cases diarrhœa.

NOTE II.—If administered at distant intervals—say of three or four hours—the effect is much less marked than when given rapidly and in anticipation of the onset.

THE TREATMENT OF THE SCROFULIDES (LUPUS).

BY HENRY G. PIFFARD, M.D.

Professor of Dermatology, University of the City of New York, Surgeon to the Charity Hospital, &c.

Believing that Lupus is essentially a scrofulous affection, I have adopted the nomenclature and classification of Hardy, who arranges the different varieties as follows :—

Erythematous Scrofulide.
Corneous ,,
Pustular ,,
Tubercular ,,
Phlegmonous ,,

For a graphic description of the clinical features of these affections, the reader is referred to Hardy's original memoir,[1] or to the writer's translation of the same.[2] Their histology I have recently considered elsewhere,[3] and shall devote the present paper to the question of their treatment.

The intractable nature of these affections and the disfigurements which they frequently produce invest this portion of their history with an intense practical interest, and lead me to present somewhat at length the views of those who are able to speak advisedly upon the subject.

The internal treatment should be that which is advisable in scrofula generally, and need not be considered in detail. Arsenic, though praised by some, has never appeared to me to influence the course of the disease in the slightest degree. Repeated and prolonged trials of both Fowler's and Donovan's solution (liq. hydrarg. et arsen. iodidi) have always caused me to regret the time lost in using them. The most appropriate internal treatment, however, is rarely, if ever, capable of removing the existing lesion, its sole office being, by bringing the general system into a more normal condition, to facilitate the action of external applications and to diminish the chances of relapse, and it is to the external treatment that we must mainly look for the cure of the affection.

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[1] Leçons sur la Scrofule et les Scrofulides, etc. Paris, 1864.
[2] *New York Medical Gazette*, Dec. 5th, 1868, *et seq.*
[3] *New York Medical Journal*, August 1875.

If we remember that the natural tendency of these affections is to extend indefinitely, and almost invariably to leave cicatrices, the indications for treatment are perfectly plain; namely, to check the spread of the eruption, and to cure the existing lesion with the least possible scarring. The details of treatment will vary with the particular variety under notice, and will be considered in the order in which they have been given.

Treatment of the Erythematous and Corneous Scrofulides (Lupus Erythematosus).—Kaposi recommends frequent frictions with the *spts. saponatus kalinus*,[1] and states that he has thus caused the lesion to disappear with leaving the slightest trace. I have had the same happy result follow the use of glacial acetic acid applied bi- or tri-weekly. Both of these applications act superficially and without producing an eschar, and seem to effect their purpose by causing absorption. I have likewise had excellent results follow repeated and energetic frictions with the following:—

℞ Saponis viridis, oz. viij.
Glycerini.
Olei cadini. āā. oz. ij.
Ol. rosarum. q.s. M.

These preparations should be used in preference to stronger caustics, which, destroying tissue, would necessarily be followed by a cicatrix. The only objection to this treatment is the length of time required. In a few more fortunate instances a cure may result in a few weeks from twenty or thirty of the frictions, or applications of the acid, but commonly their use must be prolonged for several months. These means are admirably adapted to recent patches, and may result, as observed by Kaposi and myself, in perfect cure. If, however, the eruption has already existed for some time, and portions of it, especially the central and older parts, begin to exhibit atrophic changes, it will be vain to hope for recovery without cicatrix. Under these circumstances the centre of the lesion may be left to take care of itself, and attention be confined to the periphery, that is to the advancing border. If the preparations spoken of do not appear to act with sufficient vigour, the pure sapo viridis[1] may be substituted for them, applied daily with friction, or spread upon a piece of linen and left in contact with the parts for several hours. If the green soap cannot be readily obtained, a solution of caustic potassa, 25 per cent., to 50 per cent. may be used instead, applied once a week or at more distant intervals according to the effect produced. The acetic acid and sol. of potash are usually applied with a camel's-hair brush or a glass rod. Both of these methods, however, are objectionable, as they are apt to deliver an excess of the fluid, which runs over and injures healthy parts. A much better way is to employ a small hard-rubber probe around the end of which a little cotton-wool has been wrapped. Stronger caustics than these mentioned are rarely required, unless speedy destruction of the lesion is necessary; in which case *potassa cum calce* or chloride of zinc may be employed. When the lesion is small and its early extinction desired, I prefer removing it (*ægroto volente*) by excision.

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[1] ℞. Saponis viridis, lb. ij.
Alcohol, lb. j.
M. Let it stand for twenty-four hours, filter and add spts. lavendulæ, oz. ij.

Dubina,[2] and more recently Volkmann,[3] prefer to remove the infiltration by means of hundreds of fine punctiform scarifications. These are made with a small sharp-pointed knife to the depth of 2 millimètres. The punctured spots should be covered with lint well pressed on, to stop the bleeding, and left attached until it falls spontaneously. The operation should be repeated in from two to four weeks, from three to eight operations being usually sufficient. Volkmann says that no scarring results from the treatment. I have had no personal experience with this method in the erythematous scrofulide, but have used a modification of it in the next variety.

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[1] Sapo viridis or green soap, so much used in Germany, is composed of spermaceti, lb. ij., sol. of hydrate of potash (sp. gr. 1·33), lb. j.

[2] Rapporto annuale dei Malati Cutanei dell' ospedale magg. Milano, 1865.

[3] Ueber den Lupus und seine Behandlung. Leipzig, 1870.

Treatment of the Pustular Scrofulide.—The local treatment of this variety is quite simple. As scarring is inevitable, we may attack the lesion with some vigour. If it be in an early stage, without much ulceration, I have had good results from linear scarifications, followed by green soap. When, however, there was considerable ulceration, it was formerly my custom to make a few superficial cauterisations with the liq. hydrarg. nitratis, followed by the application of a mercurial ointment (usually the proto-iodide, ten grains to the ounce). Neligan[1] and Weisse[2] have used with advantage the acetate of zinc. In this way the ulceration may sometimes be coaxed to heal, but the process is tedious, and the resulting cicatrix often unstable. Latterly I am inclined to prefer more rapid and energetic measures, such as thorough cauterisation with the chloride of zinc. The chloride exposed to the air until it has sufficiently deliquesced is applied to the ulcer in a thin layer by means of a platinum spatula. It is then covered with a piece of lint cut to fit the part, and the whole left to itself until the eschar falls, which may not occur for a week or ten days. Upon removal of the crust healthy granulations will usually be apparent (and sometimes complete cicatrisation), but if not the cauterisation must be repeated. In case the floor of the original is covered with large, uneven, and papillomatous granulations (*verrucous form*), it is best to remove them by thorough scraping with the "sharp spoon" (Fig. 1), an instrument specially recommended in this connection by Volkmann. It is also well to give the edges a good scraping with the spoon. The morbid tissue yields more readily than the healthy, and a considerable portion of the disease may be thus

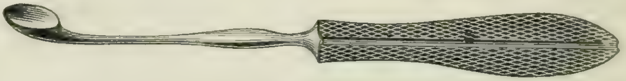

FIG. 1.

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[1] "A Practical Treatise on Diseases of the Skin," Am. Ed., Phila. 1860.

[2] Am. Jour. of Syph. and Derm. vol. i. p. 316.

removed mechanically. When a somewhat level surface has been obtained, apply the zinc in the manner described, and, after the fall of the crust, repeat the operation if necessary.

Treatment of the Tubercular Scrofulide without Ulceration, or with Superficial Ulceration.—If ulceration has not yet occurred, we have several methods of treatment from which to choose. The indications are to check the spread of the lesion, and to do so with the least scarring. Excision may be practised, and is to be preferred if the lesion is limited and there is sufficient extensibility of the surrounding skin to permit of coaptation of the edges of the wound, so that we may hope for a linear cicatrix. If the lesion is small and quite superficial, it may be readily removed with the skin-grafting scissors (Fig. 2). Excision to be effectual must be thorough, both as to depth and extent. As the morbid deposit in this variety rarely extends beneath the subcutaneous tissue, and usually ceases at the lower part of the corium, no difficulty will be experienced in this direction; but the infiltration is apt to extend laterally for some distance beyond the points at which the disease is evident, and consequently the incisions should be made at least two or three millimètres beyond the apparent limit of the lesion; otherwise a speedy return of the trouble may be anticipated. If the situation of the disease or the condition of the parts renders excision undesirable, the tubercles may be destroyed with nitrate of silver. This method is largely practised in Vienna, and consists in boring into the diseased tissue with a sharpened point of fused nitrate. The points of silver prepared by Squibb, to which he adds a little chloride, to make them harder, are admir-

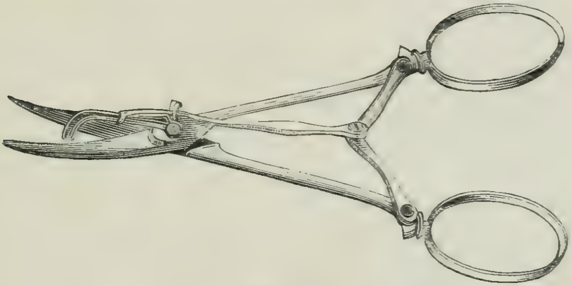

Fig. 2.

ably adapted to this purpose. Many of the tubercles, or rather papules, are quite small, and boring into them with the ordinary caustic points inflicts unnecessary pain and injury upon the adjacent healthy tissues. To obviate this, I have for several years used a probe made of irido-platinum,[1] of the form and size shown in Fig. 3. The point of the needle is dipped in fused nitrate (Squibb's is better for this purpose than the pure), a thin layer of which immediately congeals around it. As soon as it is cold, a second or a third dipping will increase the deposit of silver sufficiently. With these needles quite small punctures may be made, and are less painful than those made with the ordinary silver stick. If the irido-platinum needles are not at hand, ordinary straight surgeon's needles may be used, but are not so convenient and are soon destroyed. Actual or galvano-cautery may be employed, but possess no advantages over simpler measures, except the opportunity they afford for display.

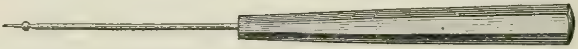

FIG. 3.

Lastly, the disease may be destroyed by means of arsenical paste. Hebra speaks of this method so enthusiastically that I shall give his description in full. The formula employed is :—

℞ Acidi arseniosi, gr. xx.
Cinnabaris, dr. j.
Ungt. rosæ, oz. j. M.

The paste should be thinly spread upon linen, which is cut in narrow strips and accurately applied to the affected part. It is then covered with lint and held firmly in place with adhesive plaster. It is left in position for twenty-four hours, when a fresh application is made without previous washing. At the end of another twenty-four hours it is again applied. During the first day the parts to which the application has been made present very little alteration and are not very painful. At the end of the second day of treatment, however, the pain increases, and when the plaster is removed the tubercles are found to have a greyish colour and macerated aspect. After the third application the pain becomes still more severe, and the integument surrounding the lupous patch becomes the seat of considerable œdema. On removing the plaster at the end of the third day, all the tubercles, both large and small, are found reduced to the condition of a brownish-black eschar. and covered with a thin pus. The eschars correspond to each tubercle, and are sharply defined by the intervening healthy skin. The pain ceases quickly and completely, and the œdema disappears in two or three days. The great advantage of this arsenical paste consists in its not injuring or even excoriating the healthy skin, while the morbid tissue is safely and thoroughly destroyed.

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[1] Pure platinum needles would be too soft and flexible.

The little sloughs, which are as numerous as the pre-existing tubercles, are loosened by suppuration. and removed in five or six days, leaving small holes separated from each other by islets of healthy skin. Cicatrisation is rapid, and the resulting scar not very noticeable.

Sometimes two applications are sufficient; or again, if the tubercles are large and covered with thick epidermis, two or more courses may be necessary. Arsenical poisoning has not occurred in any of the hundreds of cases treated by Hebra in this manner.

If the tubercles have already *ulcerated*, they may sometimes be coaxed to heal, as already stated, by stimulating applications of acetate of zinc and the like; but it is better to excise, subject to the restrictions above noticed. If incision is contra-indicated, the ulcer and its margin may be well scraped with the sharp spoon, and then cauterised with the chloride of zinc, or a mixture of equal parts of caustic lime and caustic potash made into a paste with absolute alcohol. The fall of the slough will usually reveal a healthy ulcer with a tendency to heal. I much prefer the caustics to the simply stimulating applications, as the latter have in my hands more frequently produced an effect opposite to the one desired.

In the *hypertrophic* form, excision when convenient, or destruction by the actual or galvano-cautery or by electrolytic needles, seems to be the most reliable method; but never having had this variety under treatment, I cannot speak from personal experience.

Treatment of the Tubercular Scrofulide with deep Ulceration.—This form demands the most prompt and energetic treatment. In the previous varieties it was at most a question of disfigurement, but in this it is a question of life and death, for if the destructive processes are not checked, a fatal result is by no means rare. In this condition there is but one method to be relied upon, and this is excision followed by cauterisation. In recent cases this presents no difficulty; but when the disease has already advanced to a considerable extent, and the bones have commenced to suffer, the indications are not so easy of fulfilment. These cases were formerly regarded as incurable, and active measures were not recommended. Mr. Moore, however, in his admirable monograph upon *rodent cancer*[1] as he terms the affection, has demonstrated the possibility of curing cases characterised by a very extensive destruction of deep tissues, cases which would usually be regarded as hopeless. His plan consists in removing the diseased parts as thoroughly as possible with the knife, and afterwards applying a layer of deliquesced chloride of zinc. The wound is then packed with cotton-wool, which is left in position till thrown off by suppuration and the formation of healthy granulations. Plastic operations may then be employed to remedy the deformity.

Treatment of the Phlegmonous Scrofulide.—In the early stages and before suppuration has occurred, the nodules may sometimes be caused to disappear by the employment of frequent frictions with the ungt. iodi or ungt. potassi iodidi; but if they have already softened and contain pus, this should be removed by a fine puncture and suction with a hypodermic syringe, with the subsequent instillation of a drop or two of iodine. This is much better than the free incision recommended by some, and is also better than leaving the lesion to take its own course, as in the latter case considerable scarring is inevitable. If the abscess has already opened and an ulcer formed, it should be freely stimulated and perhaps cauterised with some of the agents already mentioned.

Lupus in its several varieties is far from being the intractable disease it was formerly considered, and, when properly managed, is in the majority of cases perfectly curable. It is only a question of time, patience, and the judicious selection of remedial agents adapted to the particular case under consideration.

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[1] "Rodent Cancer." London, 1867.

UTERINE ASTHMA.

BY J. WARING-CURRAN, F.R.C.S., L.K.Q.C.P.I., L.R.C.S.I.

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Of that variety of asthma met with not unfrequently in those patients at a particular time of life, who suffer from uterine tumours, and which seems to be slow in yielding to the ordinary remedies for asthma, I am desirous of recording the plan of treatment I have found most efficacious without entering upon the cause of the asthma which is so easily explained. Women with fibroid tumours of the uterus or its appendages appear to suffer more severely than those who have any other form of tumour, and the paroxysms of asthma are most severe during the menstrual period, which in general is excessive and prolonged. In three separate cases I found no evidence nor symptom of asthma until the day or two before the catamenia commenced, and without treatment the asthma passed away as the patient recovered from the menstruation. One lady, whom I have tapped on five different occasions for ovarian dropsy, and who is most regular in her periodic discharge, always suffers from asthma at the approach of the "period," but the severity of the paroxysms are nothing compared to those occurring in patients with a more solid form of tumour, even when small. A lady patient who has been twice married, but never borne any family, has suffered from a fibrous tumour of the uterus for fifteen years. The tumour is not much larger than an ordinary orange, there has been no recent increase in its size, and no pain attending it, but arriving at the age of forty-five years, she became irregular, asthma became developed, and each month manifested itself in a more aggravated form. The ordinary remedies for asthma failed in the hands of her attendant when I first saw her, which happens in the majority of instances. In the case of another lady, whom Dr. Clifford Allbutt of Leeds was good enough to see, and for whose opinion I was grateful, inasmuch as he professionally attended her sister who died of hepatic cancer, the uterine tumour which occupied the right wall of the uterus was in abeyance ten years; but when she arrived at forty years of age it became enlarged. She then consulted Dr. Marion Sims, and the tumour was kept stationary, so to speak, by the application of iodine and the internal administration of some salt of iodine. Residence at the Woodhall Spa, and the drinking of its waters, which contain iodine largely, proved very beneficial, but as she became older, the tumour increased and the asthma with it. I have seen patients fight for breath, blistered in some instances over the chest, covered perhaps with a profuse rash from some irritant, dosed with the ordinary remedies for asthma, and yet continue unrelieved. "I fear," a lady said to me, who suffered in this way, "the approach of my poorly time, as I would do some fearful accident," and in truth the suffering of some is as severe as it can be described, inasmuch as the asthma is of that dry form without expectoration to relieve it. The result of my experience is that applications to the chest afford no relief. Neither do inhalations nor smoking benefit the patient, but the whole attention must be devoted to the uterus. If the asthma precede the catamenia it must be encouraged to commence by a warm bath, and a small dose of Dr. Long's ergot solution as prepared by his process for me, and now largely manufactured by Messrs. Corbyn and Stacey, of High Holborn. Should the discharge be excessive it must be controlled, but not stopped, by judicious and well-timed doses of the same drug, but that which will relieve the asthma at any stage is belladonna applied locally and given freely internally. The extract I find the most satisfactory and reliable preparation for external use, and the tincture I give internally combined with full doses of bromide of potassium. In the intervals I prescribe iron and strychnine, and apply iodine locally. All new-fangled remedies have failed in my hands, and subcutaneous injection has never proved either safe or satisfactory. In any instance where there is prolapse of the womb with a tumour behind, and uterine asthma occurring, I use a belladonna suppository. The effect on the eye is sometimes complained of, but there is little choice in the alternative of this temporary inconvenience and the nature of the suffering which uterine asthma induces. I may say in conclusion that the extract of belladonna should not be confined alone to the region where the tumour is situated, but that the spinal nerves should get the benefit of a little, spread on a piece of lint, and applied along the lower dorsal and lumbar spines; but applications to the chest afford about as much relief as they would to the knee in incipient hip-joint disease.

SYMPTOMS, PATHOLOGY AND TREATMENT OF ALBUMINURIA.[1]

BY T. LAUDER BRUNTON, M.D., F.R.S.

(*Continued from* p. 361.)

THE next thing we have to do is to inquire how the albumen which we find in the urine gets there, and in order to do this we must take a glance at the structure of the kidney.

The function of this organ is to separate the products of tissue waste and any excess of water which may be present in the blood, but at the same time to prevent anything that is of use to the economy from passing through. When we wish to separate two substances, one of which is insoluble and the other soluble, in the laboratory, we use a filter, and we have in the kidney an apparatus for filtration. When we wish to filter rapidly we use a number of filters at once, so as to increase the surface of filtering paper, and if we are in a great hurry we help the fluid through by means of pressure, generally that of the atmosphere, as in a Bunsen's pump.

In the kidney we have something similar, for the renal artery inside the kidney divides into branches, which break up into knots of small vessels, thereby increasing their surface enormously; and the renal artery is extremely wide, so that there is always a considerable pressure on these little vessels compared with what there usually is on small vessels generally. And just as a filter is put in a funnel which collects and conveys away the filtrate, so these bunches of arterioles or glomeruli, as they are called, are enclosed in a little bag or capsule which collects the urine as it exudes through them. But the urine, as it filters through, contains a number of salts which may be utilized in the body, and more water than the organism can well afford to lose. Therefore, before it is excreted it passes through a long winding tube lined with epithelium and dilated at two points, while it is narrow at two others. Thus the fluid finds a difficulty in getting through rapidly, and lies for a while in the dilated parts of the tube, so that the epithelial cells which line them have plenty of time to absorb the superfluous water and the salts, which may again be utilized. But what are the cells to do with this water and salts? How are they to get rid of them? They do so by giving them up to the veins, which form a plexus all round these tubes, and absorb and convey away into the general circulation all that the cells remove from the tubules. It is thought by many, and with great probability, that the cells lining the tubules do not merely absorb from the tubules the water and salts which they give up to the veins, but that they also take from the veins various products of tissue waste, especially urea, and excrete them into the tubules. Between the tubules and veins are lymph spaces, in which both they and the arteries lie, and this fact I wish you especially to remember, as it is of great importance. We may, if we like, look on the kidney as a sac containing lymph, in which the arteries, tubules, and veins, are all imbedded, though they are packed so thickly together that we hardly recollect that there is any lymph space there at all; just as when we stuff a lot of tow into a pan of water so as to fill it, we see only the fibres of the tow and forget that they are lying imbedded in water, which fills all the interstices between the fibres. This will be more evident if we look at the right hand side of the accompanying diagram, in which the tubules, arteries, and veins, thickly crowded together as they are, may be fairly compared to the closely packed fibres of a bundle of tow, while all around them is lymph. At the left hand side of the diagram the capillaries have been omitted so as to show the course of the tubules more plainly. Now, ordinarily, the glomeruli do not let out any albumen, though they allow water, salts, urea, and such like crystalline products to filter out, or possibly it might be more correct to say diffuse out, seeing we have fluid on the outside as well as inside of the arterial twigs instead of air on the outside as in ordinary filtration. But filtration and diffusion seem to be merely varieties of the same process, if we accept the experiments of Moritz Traube.[1] The molecular weight of a body seems, according to him, to represent the size of a single molecule, and a body with a low molecular weight, and consequently a small-sized molecule will pass through the minute pores of an animal or vegetable membrane when the big molecules of a body which has a large molecular weight would stick on their way. Thus you know that Graham divided bodies into crystalloids and colloids, because crystals

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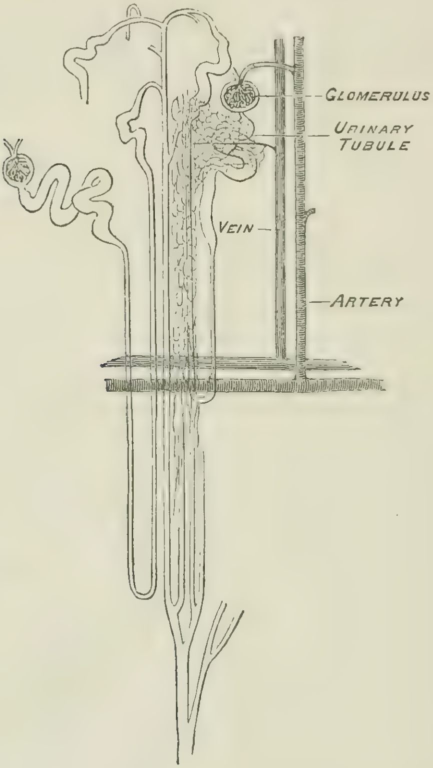
[1] Read before the Abernethian Society at St. Bartholomew's Hospital.



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[1] Centralblatt der med. Wissenschaften, 1866, p. 97.

when dissolved generally diffuse easily, while bodies which do not crystallize hardly diffuse at all. But hæmoglobin, the colouring matter of the blood, forms beautiful crystals, and yet it does not diffuse, a fact which seems difficult to explain unless we adopt Traube's hypothesis, and then it is as plain as possible. Most crystals have a low molecular weight, but hæmoglobin has an enormous one, its formula, according to Preyer, being $C_{1200} H_{960} N_{154} F_2 S_6 O_{354}$, so that its giant molecules are simply too big to get through the pores of a membrane.

Now serum albumen, as I have said, does not diffuse through the kidney, but white of egg does, and whenever we inject white of egg under the skin it appears again in the urine, and the same is the case if a man eats more eggs than he can digest. A single raw egg drank before a race is popularly said to give a man wind, but I have heard of a man who, when about to run a race, instead of one drank eleven eggs, with the result that, instead of improving his wind immensely as he expected, he could not run at all. I have little doubt that if his urine had been examined albumen would have been found in it. When eggs are injected into the rectum also part of the albumen sometimes remains undigested, but is absorbed and passes out in the urine. Another sort of albumen discovered by Bence Jones, and named after him, passes into the urine in the same way as white of egg.[1]

From these facts, judged in the light of Traube's hypothesis, it would almost seem that the molecular weight of white of egg and of Bence Jones's albumen is less than that of serum albumen, and that they filter through while the latter is retained. But though the arterial twigs in the glomeruli may allow white of egg to pass, they do not appear ever to allow serum albumen to exude even under the greatest pressure, unless indeed they should happen to burst altogether, and then not only the albumen, but the blood corpuscles also get out into the urine. The reason for this belief is that even when we tie the aorta below the renal arteries, and thus raise the blood pressure enormously in the glomeruli, not a particle of albumen appears except, as I have already said, it comes along with blood.[1]

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[1] The only practical application to which a knowledge of this kind of albuminuria may be turned is that, if you are feeding weak patients with enemata of eggs, the appearance of albumen in the urine may not be at all an indication of kidney-disease, and researches on this point would certainly be of service to the profession.

But the veins are very different from the arteries in this respect, and a slight increase of the blood pressure within them is sufficient to produce albuminuria. We can easily fancy this when we take a glance again at the structure of the kidney. The tubules are surrounded by lymph, which probably exudes from the capillary net formed by the artery after leaving the glomerulus. So long as the veins are ready to absorb this lymph matters go on smoothly, but whenever the pressure inside the venous radicles is increased by any obstruction in front, the case becomes very different. The lymph cannot get back into the arteries because the pressure in them is too great, it cannot get into the veins for a similar reason, the lymphatics do not seem to be able to carry it all off, and the easiest way of escape is into the tubuli uriniferi, and so out it goes, carrying with it the albumen it contains, and thus producing albuminuria.

Thus any obstruction to the return of venous blood from the kidneys is one of the causes most certain to produce albuminuria. Let us, therefore, follow the course of the renal veins so as to see where any obstruction is likely to occur. First, there may be a tumour pressing on the renal veins themselves or on the vena cava, and this at once reminds us that a pregnant uterus may be a temporary cause of albuminuria. But except from this physiological tumour, we find comparatively few instances of pressure on the veins, and, omitting tumours of the liver, the first cause of obstruction we come to is the heart. Whenever the right side of the heart becomes dilated, and the tricuspid valve incompetent, each cardiac systole drives some of the blood back into the veins, and thus leads to serious congestion of the kidneys. A common cause of albuminuria, therefore, is heart disease.

But tricuspid disease is rare as a primary lesion, and incompetence of this valve is generally secondary to affections of some of the other cardiac orifices, such as the mitral or aortic.

As it is more common in cases of mitral disease, we will consider this first. You will often find patients who have loud mitral murmurs without a trace of albuminuria. So long as the right side of the heart is tolerably strong, it can hold its ground even against the increased pressure it has to overcome, and it is not until it begins to get weak that it relaxes and dilates before the internal pressure until the tricuspid valves no longer suffice to close the enlarged orifice, and regurgitation consequently takes place. The same is the case in aortic disease, only the pressure there has first to overcome the left ventricle and dilate the mitral orifice before it can begin to perform the same operation on the right ventricle and tricuspid valve. Thus it is that venous congestion and albuminuria do not so readily follow aortic as mitral disease.

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[1] Stockvis, Sur l'albuminurie.

But any obstruction to the flow of blood through the lungs will produce more or less congestion of the kidneys, and thus lead to albuminuria, although it would appear that the obstruction must be pretty considerable before this symptom appears. Thus we do not find albumen in the urine in every case of pulmonary derangement; but Dr. Parker has found it temporarily present in considerable quantities in acute pneumonia.[1] In cholera too, where, as is usually believed, the pulmonary vessels contract spasmodically, so as to prevent the blood from flowing through them, we would expect albuminuria to be present, and so it is—indeed, some have said that the only reliable diagnostic sign between true cholera and other diseases simulating it is the presence of albumen in the urine. If we could produce a similar spasm of the pulmonary vessels reflexly, we would expect a similar result; and Dr. George Johnson has observed a phenomenon which may possibly be due to this cause.[2] Sometimes after bathing albumen appears in the urine of perfectly healthy persons. Now I daresay we have all felt the peculiar constriction about the chest and difficulty of breathing when we walked up to the chest into cold water. We have no proof, so far as I know, that this is due at all to contraction of the pulmonary vessels, and I only suggest it as a possibility; but if these vessels should contract under the influence of an impression conveyed to them reflexly from the nerves of the skin, we can at once understand why albumen should appear in the urine in such cases.

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[1] I am inclined to think, however, that there must be a weakening of the vasomotor nerves to the renal veins as well as obstruction to the circulation in the lungs, for I have seen a case of great dilatation of the right ventricle and tricuspid incompetence where no albumen appeared in the urine, notwithstanding the great pressure to which the blood in the renal veins must have been subjected by the backward flow from the ventricle.

[2] Brit. Med. Journ., Dec. 6, 1873, p. 664.

One great cause of true albuminuria, then, is *venous congestion.* The next cause has to do, not with the vessels, but with the tubules. When inflammation of the kidney has occurred, and the epithelium lining the tubules undergoes degeneration and peels off, leaving the walls of the tubules bare, there does not seem to be any reason why the lymph which surrounds them should not filter into them instead of going into the veins; and practically we do find that when the tubules are in this condition the urine is albuminous, just as we would expect.

Having already trespassed too much on your patience, I cannot enter here into the different kinds of kidney disease in which albumen occurs, but I would like to say a word ere closing on the question of treatment.

We have seen that venous congestion causes albuminuria, and will of course increase it, even when it depends on denudation of the tubules. Arterial congestion does not *cause* albuminuria; but if much blood is flowing through the arteries of the kidney there will be more in the veins than if the circulation was less, and consequently arterial congestion, by increasing the pressure in the veins, may aggravate albuminuria already present, although it does not produce it.

The first indication for treatment then is, remove the venous obstruction if you can. The second is, lessen the flow of blood to the kidneys by drawing some of it elsewhere.

The venous obstruction depending on pregnancy will cease at the time of parturition, but it may be diminished by the prone position, while that depending on cardiac disease may be lessened by the use of such drugs as digitalis, which causes the heart to contract more forcibly, and by thus diminishing its orifices may render its valves once more competent.[1]

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[1] Digitalis has also a direct action on the renal vessels which it causes to contract when given in large doses. Brunton and Power; Proceedings of Roy. Soc., No. 153, 1874.

The second indication is fulfilled by warm clothing, warm baths, and diaphoretics, which draw the blood to the skin; and by purgatives, which cause a greater flow of it towards the intestines.

The third indication is to lessen the anæmia, which results from the drain of albumen, and of itself produces so many distressing symptoms and injurious effects.

This indication is fulfilled by the administration of iron, which increases the number of blood-corpuscles, and at the same time diminishes the loss of albumen through the kidney. I will not at present attempt to explain how it acts, for this is matter of supposition, and others may be prepared with a more probable hypothesis than I can offer.

The special points to which I have tried to draw attention in this paper are—

(1) The symptoms of albuminuria are those of anæmia, viz.—a pale and pasty complexion of the patient, who, on inquiry, tells you that he is weak, that he is short of breath, and suffers from dyspepsia and nervous weakness; that you may observe œdema of the legs, and you find albumen in the urine.

(2) The modes of detecting albumen.

(3) The causation of albuminuria.

  a. Spurious albuminuria due to white of egg.

  β. True albuminuria, in which serum albumen appears in the urine, and which is due to venous congestion or disease of the tubules.

(4) The treatment of albuminuria.

CARBUNCULAR INFLAMMATION OF THE LIP.

BY J. MILNER FOTHERGILL, M.D.

THIS form of carbuncle is far from common; but its extreme seriousness gives it a grave importance. Beyond the general statement that carbuncles on the head are very serious, our text books say little about this malady. Billroth (*Surgical Pathology and Therapeutics*), however, describes it very distinctly. He says, "The course of the ordinary carbuncle on the back is tedious and painful, although it rarely causes death. But there are cases, especially when a carbuncle or a diffuse carbuncular inflammation occurs in the face or head, which are accompanied by high fever and septic, or, as was formerly said, 'typhous' symptoms, and which prove dangerous and are even generally fatal (Carbunculus maligna, Pustula maligna). All carbuncles of the face are not of this malignant character; some run the usual course, and only leave a disfiguring cicatrix; but as it is difficult and often impossible to tell how the case will turn out, I would advise you always to be very careful about the prognosis. Unfortunately I have had such sad experience in these carbuncles of the face, that in any affection of the kind I am very solicitous about the life of the patient. Let me briefly narrate a case or two. In a young, strong, healthy man, on a journey to Berlin, from some unknown case a painful swelling began in the lower lip; it increased rapidly, and soon spread to the whole lip, while the patient became very feverish. The surgeon who was called applied cataplasms, and apparently undervalued the condition of the patient, as he did not see him for two days. The third day the face was greatly swollen, and the patient had a severe chill, and was quite delirious when brought to the clinic. I found the lip dark bluish-red with numerous white gangrenous patches in the skin. Several incisions were made at once, the wounds were dressed with chlorine water; cataplasms applied, and a bladder of ice placed on the head, as meningitis was beginning. As soon as I saw the patient I declared his condition hopeless; he soon fell into a deep stupor, and died twenty-four hours later, four days after the commencement of the carbuncle on the lower lip. In many cases of malignant carbuncle of the face, on careful examination we shall find an extension of the inflammation to the cranial cavity, and consequent disease of the brain.

"But I must remind you that the extent of this inflammation as found in the cadaver is not at all in proportion to the severity of the constitutional symptoms, so that the latter are by no means fully explained by the post-mortem appearances. Indeed there are cases, and just the most quickly fatal ones, where death occurs without our being able to find any disease in the brain. At all events the high fever and fatal blood infection are mostly the results of local disease; hence we must suppose that in these carbuncles, under circumstances which we do not exactly understand, peculiarly intense poisons are formed, whose reabsorption into the blood causes death. But the causes of malignant carbuncle are in most cases entirely obscure."

These observations of Billroth had not come under my notice when called to the following case; neither had I previously seen a case of such carbuncle in the face.

Mr. J., aged 38, a practitioner in the suburbs of London, was taken ill on Friday, Sept. 10th. He possessed an admirable physique and was a man of unusually temperate habits, but for some months past had been much worried by the death of a child, and had overtaxed himself in sitting up with it; after this the demands of practice caused unwonted irritation and exhaustion, so much so that he engaged an able qualified assistant. On Sept. 10 he felt very feverish and the pulse was up to 140. A warm footbath produced perspiration and he slept somewhat during the night. Next day there was a pimple merely on the upper lip, and he felt well enough to get up, but still felt far from well. Had an uneasy night. On Sunday, the 12th, the lip was swelling and the fever great. Temp. 105° Fahr. The pulse was rapid, 130, and there was great languor and prostration. This increased, and at night there was delirium. Next day he was worse, the local inflammation spreading; delirium showed itself during the day. Following the recommendations, given by myself in the *Practitioner* for December 1874, as to "the management of delirium," bromide of potassium (grs. xv.) and digitalis (♏v.) were administered every six hours. This controlled the delirium very satisfactorily. Fifteen drops of the muriate of iron were also given every six hours, together with brandy, beef-tea, milk, &c. I was then called in, but could not see the case till Tuesday the 14th.

The patient was then as follows. He was lying on his back in bed; and could only get up when delirious. The skin was hot, the perspiration being profuse. The pulse was 130, the temperature he would not permit to be taken. The lip was thick, swollen, hard, and blue-red. The inflammation was spreading up the face as erysipelas, extending to the eyes. The tongue was covered with a thick white fur, and the breath was very offensive. There was much starting of the muscles, and rapid but tremulous speech. The delirium was not uninterrupted, and was of a light character. Though hitherto unacquainted with malignant pustule the case was, on the face of it, one of grave character. As the bromide and digitalis had controlled the delirium so satisfactorily they were continued. Half a drachm of sulphate of magnesia was added to the iron to keep the bowels open, and relieve the breath. Acetate of lead and opium were applied on folded lint to the nose and cheeks. On the Wednesday, the spread of the erysipelas was arrested, the patient *in statu quo* but the delirium much better. The treatment was continued. On Thursday, the telegram reached me too late to see him; on Friday a telegram told me he was worse, and that the delirium had reappeared. I at once arranged with Dr. Broadbent to have a consultation. This we had at 6 P.M. The condition of the patient was as follows:—Pulse 130, temperature 102°, skin dry, breath not so offensive, the bowels having been moved pretty freely and copiously. The erysipelatous spread had ceased, but the lip was fuller and had "ripened" there being several points of matter to be seen. There wer hard deep-seated abscesses in the areolar tissue on each side of the alæ of the nose. That on the right side had opened outwardly, that on the left side was still closed. The condition of prostration was now marked, and the position that on the back in the middle of the bed. There was little starting of the muscles, however. The condition was a grave one; and there was decided meteorism, indicating paralysis of the intestinal muscular fibre. The nature of the malady was now distinct, and the prostration of so stalwart a man in a few days pointed to a very serious condition of affairs. The delirium was now that of asthenia, or collapse. Dr. Broadbent told us of the seriousness of such affections and of the gravity of the prognosis. Fortunately the condition was not yet typhoid, and the fur on the tongue was moist and free from any brown shade.

The lip was opened in several places, and the abscess on the left side of the nose laid open. The effect of the pain was to improve the pulse, which became slower and fuller under the stimulus. The pus that flowed was creamy and laudable. Both these facts were encouraging. The lip was dressed with a solution of carbolic acid to prevent any putrefactive change in the pus that might give rise to poisonous products, which being absorbed might cause pyæmia.

The iron was continued with five grains of quinine instead of the magnesia; the brandy increased to eight ounces; fluid food *ad libitum* was ordered; and it was determined to procure sleep at all hazards, the last night having been almost sleepless. The tincture of opium was selected, there never having been any albumen in the urine to contraindicate it, and half a drachm was given at once with fifteen drops of tincture of digitalis to obviate too much sedative action on the cardiac ganglia; the asthenia being pronounced. It was decided to continue the laudanum till sleep was induced. At midnight, forty drops more of laudanum were given, but still sleep was not procured; at 5 A.M. another half drachm was given, and sleep gradually came on.

On Saturday sleep was constant, and on the patient being wakened to take his food and medicines, he immediately dropped off again. During these waking intervals there was no delirium. The meteorism continued, so turpentine stupes were ordered. Half a drachm of laudanum to be given at bedtime. The lip was suppurating freely, and the pus continued of good quality.

On Sunday the 19th the condition of matters was satisfactory. The patient took any amount of food given to him. The turpentine had lessened the meteorism very decidedly, and the proof of the returning tone of the intestinal muscular fibre was very audible. The belly though still swollen was soft. The soporose condition continued. The lip was discharging freely, and in order to obviate any septic poisoning as far as possible fifteen grains of chlorate of potash were given with each dose of quinine and iron.

Monday, still improving, could raise the arms above the head. The intellect was unclouded, the muscles were steady, the tongue clean, the bowels had moved freely, all fœtor had gone from the breath, and the general condition was all that could be desired. Indeed, the picking up was swifter even than the downward progress. The patient made an uninterrupted recovery; the lip gradually diminishing in size, and the scars are but small and unimportant.

On Friday the 24th, the day week of the consultation, he was up from 9 A.M. to 9 P.M. reading on the couch, and could walk about the room steadily and without staggering.

On Friday the 17th the condition of the patient was very grave, and if sleep had not been procured by active measures the case would soon have been hopeless; Dr. Broadbent's experience at the London Fever Hospital leading him to take a rather gloomy view of the case; for in his experience of facial carbuncle, namely, eight cases, only one recovered, and in that case the lip "ripened." The success of the present case was due in the main to the magnificent powers of the patient, but still the treatment may claim something for itself. Though the extreme gravity of the case was not recognised until Dr. Broadbent pointed it out, still the rapidly advancing asthenia had not passed unnoted, and had led to restorative and strengthening measures being adopted. The typhoid condition did not come on; still there was but a slender margin left for any further downward progress, compatible with possible recovery. The terrible prostration was out of all proportion to the apparent local mischief, and the interval betwixt the delirium of ascending fever and the delirium of collapse was but very brief. The next time the writer meets a case of carbuncular inflammation of the lip, no special warning will be needed to call out every attention to the case, or be required to rouse him to a full recognition of the gravity of the condition and the perilous state of the patient.

Review.

The Diseases of the Heart and Aorta. By THOMAS HAYDEN, Professor of Anatomy and Physiology to the Catholic University of Dublin, Physician to the Mater Misericordiæ Hospital, &c. &c. Illustrated. Fannin and Co.; J. and A. Churchill. 1875, pp. 1,232.

DR. HAYDEN is well and favourably known in connection with the literature of heart-disease, and is one of the most competent authorities on the subject here treated of. Such may well be the case when a book on its first appearance contains no less than twelve hundred pages. As to the book itself it is short and so thick as to make it a very uncomfortable book to handle. Its appearance is not at all prepossessing. If, as stated in the preface, "a curtailment of its proportions, while it would have saved much labour, would have been at the expense of an indefinite treatment of the subject," it is to be regretted that it has not been divided into two volumes. There is no doubt but that this work is a careful and painstaking compendium of what has been written upon the subject treated of; German work however being but little alluded to. The different views of the early writers on heart-disease are fully given, and as a work of reference for the growth of our knowledge on the subject it is far the best we possess. It may be a matter of opinion, but for most readers it would have been much more instructive, it appears to us, if Dr. Hayden had, instead of this, given them his own account of the matter, as the various sounds, &c. The diagnostic points are well attended to, and the pathology is exact and careful. As to disputed questions, like the presystolic murmur, the information is ample, almost profuse. The illustrations, however, cannot be commended. The work is supplied with a large series of cases, many of them of much interest, which prove the writer's practical acquaintance with the subject of which he treats.

The first chapter gives the anatomy and physiology of the heart. The second is devoted to the phenomena of the heart's action in relation to its modification by disease. The third chapter gives the physical signs of disease of the heart. The fourth relates to the causes of disease of the heart; and is far beneath the preceding chapters and still farther beneath the importance of the subject. The fifth chapter discusses pericarditis; and the sixth the diseases of the substance of the heart. Chapter seven includes endocarditis and disease of the valves; and chapter eight the formation and migration of blood-clots, a carefully done chapter; while the ninth chapter is devoted to the neuroses of the heart. The tenth and final chapter on the diseases of the aorta is by far the best in the whole book, and is well worthy of careful perusal by all—specialists and others.

With every wish to approve of this work,—the largest on the subject in our language, it is impossible for our criticism to be very laudatory. The work is built too much on the old plan of looking at diseases of the circulation as curious matters for diagnosis, rather than as maladies to be grappled with, met, headed, and treated, to be satisfactory now-a-days. There is in it laborious research and toilsome note-taking and reading; but the matter is not well arranged, and is but imperfectly digested, while the cases are not grouped to illustrate the different points of importance as they certainly might be. The material is there, but the master hand to relegate it to its proper place, and to assort it so as to make it as instructive as possible is somehow wanting. Instead of giving to the reader a clearly defined conception of the diseases of the heart as regards their causation, course, symptoms, prognosis and indications for treatment, the impression made is somewhat confusing, and passages of the greatest value are almost hid away amidst a quantity of matter of comparative unimportance. Our chief fault with the book is its treatment. Surely it is not now regarded as good practice in acute pericarditis to push the use of mercury until the gums present a swollen, soft and spongy appearance, a coppery taste is experienced, and a slight drivelling at the angles of the mouth takes place. Nor will most authorities approve of free abstraction of blood and salivation where the substance of the heart is acutely inflamed. The recommendation to use chloral hydrate in angina pectoris will be regarded with much suspicion by those who have watched the effect of that agent upon the heart. The whole question of the treatment of chronic disease of the heart lacks definiteness of outline and is hazy. On the other hand, the treatment of aneurism is given in a remarkably clear, distinct, and instructive manner, and is quite abreast the rest of that excellent chapter.

As a work of reference Dr. Hayden's book will be welcome in many libraries: but it never can become a popular textbook.

Clinic of the Month.

Treatment of Alveolar Abscess.—Mr. Isidore Lyons observes that alveolar abscess is the result of an acute inflammation of the periodontal membrane. This may arise from various causes. It is commonly the sequel of acute inflammation of the pulp of a tooth, but it may commence in the membrane. An alveolar abscess generally points opposite to the buccal or labial surface of the affected tooth, or the pus may exude at its neck, or travel along the hard palate and open at any point internal to the dental arch. Amongst the different local remedies prescribed for this affection the most common are external fomentations and poultices. This treatment is to be deplored for the following reason. When, for example, an abscess forms at the root of an upper bicuspid tooth, and the swelling is at its buccal surface, on a poultice being applied externally pus would travel above the fold of mucous membrane connecting the superior maxilla with the cheek and appear among the buccal muscles, ultimately passing through the skin thereby producing the ugly scars often seen on the face of patients who have undergone this treatment. Mr. Lyons gives several cases showing the results of this treatment, that have been admitted as in or out patients at St. Bartholomew's Hospital, and in commenting upon them remarks that the appropriate treatment would no doubt be the immediate extraction of the offending teeth, but if the patient be desirous of saving them internal fomentation (the mouth being washed out frequently with hot water) should be employed, the gums lanced, leeches applied, and when an abscess has formed free incisions made. (*Lancet*, Oct. 23, 1875.)

Treatment of Gonorrhœa by a Reversed Current of Fluid.—Dr. J. Perrot Prince remarks that in using injections, caustic, escharotic, or astringent, the prime difficulty is the almost certainty of the contagious matter being, by means of the current of injected fluid, deposited at a point in the urethra beyond where it originally existed ; or supposing the canal to have been freed from purulent matter by recent micturition, as would undoubtedly be done if the surgeon's directions were strictly followed, there will probably be set up a very active irritation, if not inflammation in a hitherto healthy portion of the membrane above the diseased point by means of the caustic or escharotic properties of the solution injected, which solution cannot be limited to the area diseased when an ordinary injection is used. In fact he considers that the treatment of gonorrhœa by the syringe now in use is more productive of strictures than would be the disease if left to run its own course, whilst the severity of the symptoms are often the result of the injected fluid setting up new inflammation, or planting the poison where otherwise it would never have reached. Dr. Prince fully concedes the benefit to be derived from the use or application of such medicinal agents as are employed in the composition of solutions ordinarily injected, providing they could be divested of the necessary attendant disadvantages of the mode of application; and in consequence of being convinced that local treatment is the only proper and reliable course to pursue he has devised a syringe the tubes of which are made of various lengths, curves and sizes, all adjusting to the same barrel. The advantage of the variety will soon be understood when the action of the instrument is taken into consideration. The syringe should, after being charged with the solution to be injected and smeared with carbolised oil (the urethra having been washed out by an immediately preceding urination), be introduced as an ordinary catheter up to a point just above where the disease is determined to have reached, then the piston forced in as with the ordinary syringe. It must be allowed to remain for a few minutes after discharging the contents in order that the solution injected may act on the diseased surface, and then gently withdrawn. The advantages which it possesses are that the current of fluid is thrown downwards by the side of the neck of the instrument, and out at the meatus, thereby not only cauterising or stimulating the membrane but removing, by a washing-out process, any matter remaining in the lacunæ or folds of the urethra. The simply removing such purulent matter from the point where it has been secreted is not however the important feature, but when it has been removed perforce of any injection, that it should be removed entirely from the channel, or if any portion is left, let it be on a surface already diseased, which can be truly said of all that portion of the urethra between the highest point attained by the disease and the meatus urinarius. Another advantage is derived from the bulb preventing the injected fluid passing beyond it, in cases where we choose to inject with very moderate force in order that the solution may longer remain in contact with the diseased surface. (*Medical Times and Gazette,* Oct. 23, 1875.)

Can Arsenic cure Pemphigus?—Mr. Jonathan Hutchinson, in a clinical lecture on the subject of pemphigus, answers this question in the affirmative, observing that though the opinions of some other observers, and especially of Hebra, do not correspond with his own, he feels himself quite justified in stating dogmatically that arsenic is the one remedy for pemphigus, and he is able to reproduce a statement he himself made twenty years ago to the effect that arsenic may be esteemed almost a specific remedy even in the worst class of cases. That arsenic does not merely repress the eruption, but remedies the unknown constitutional cause on which that eruption depends, always very much benefiting the general health of the patient. That it does not prevent the liability to subsequent attacks, but that such attacks are always much less severe than the original one, and tend, if treated by the same remedy, to diminish in intensity on each successive occasion. (*Ibid.*)

Boracic Acid in the Treatment of Ringworm.—Surgeon-Major Watson reports in the *Indian Medical Gazette,* that he has lately employed boracic acid with very great success as an external application in the treatment of the dermatophyta, or vegetable parasitic diseases of the skin. He was induced to try this remedy from witnessing its employment as an antiseptic in the Edinburgh Infirmary wards. The diseases in which he has hitherto used boracic acid have been the different forms of tinea (T. tonsurans and circinata), and in that very troublesome form of the disease which affects the scrotum and inner side of the upper thighs of many Europeans in India. Dr. Watson declares that the external application of a solution of boracic acid acts like a charm in such cases. An aqueous solution of boracic acid of a drachm to the ounce, or as much as the water will take up at ordinary temperatures, is employed. The affected parts should be well bathed with the solution twice daily, some little friction being used, and it should not be wiped off, but allowed to dry on the part. The remedy is said to be so simple, cheap, and efficacious that it has only to be once used to be preferred to all other remedies of the same class. (*Lancet,* Nov. 20, 1875.)

Extracts from British and Foreign Journals.

Is Beef-Tea a Food?—The use of soups is far more a matter of custom than of necessity. They were not in use in Italy in the sixteenth century. In England they are but little used by the peasant; and in Sweden the labourer serves them up as a dessert. In the south, olive oil, in the north, lard, butter, and other animal fats are used to combine the various ingredients of the food. The French, who can get good oil in the south and butter in the north, have always been able to supply the deficient fatty materal, and this has led to the general employment of broths and soups. The use of broths and soups has met with determined opponents as well as adherents. Harlinaun, for example, speaks against them, and states that the sick, convalescents from sickness, and old persons should avoid their use. Kleucke, on the other hand, maintains that a well-prepared broth is one of the best kinds of food. This much may be said, that, as a rule, if the broth is to be thoroughly good, the meat is hardly worth the eating. The following scientific receipt is however, given by Chevreul, in which, whilst good broth is obtained, the meat is eatable, and the vegetables excellent. Two-and-a-half pounds of beef, one-and-a-half-pound of bone, with a little salt, are placed on the fire with nine or ten pints of water. The fluid is allowed to warm very slowly, and when a boiling temperature is reached, a pound of vegetables is thrown in. The pot is covered and the contents allowed to simmer for five hours continuously; by this means both a good bouillon and a good bouillie are obtained. Too violent boiling in an imperfectly closed vessel is disadvantageous, since it leads, on the one hand, to rapid evaporation, by which the aroma is carried off, and on the other, to too rapid an escape of water, so that a fresh supply has to be added, and the broth loses in strength, smell, and flavour. The worst point about all extracts of meat obtained by heat, is always the loss of the albumen, which is so easily digested, and is at the same time so necessary for the blood. In order to obtain the latter without injury, attempts have been made to obtain the extract of meat by the so-called cold method.

Half-a-pound of fresh minced beef or chicken is placed in a basin and covered to the depth of an inch with cold distilled or boiled water. A little common salt and a few drops of hydrochloric acid are added, and it is occasionally stirred with a glass rod for the space of an hour, while standing in a cool place. The pale red fluid is then passed through a sieve, and the meat is stirred up with a little cold soft water and gently squeezed whilst on the sieve. The fluid thus obtained contains in an uninjured, natural, and dissolved condition all the nutritive materials of the meat, in addition to a little hydrochloric acid, which facilitates the act of digestion. Professor Reclam is of opinion that soup cannot be called a true nutritive substance since it is only a temporary excitant, and only apparently satisfies the wants of the economy. If the soup be consumed whilst hot, it is decidedly injurious, and should only be taken warm. Soup is only nutritive when it contains abundance of meat, eggs, legumes, and green vegetables. English ox-tail, turtle, and mock-turtle soup, are all highly nutritious, but they may be regarded as meat with much sauce. Meat that has been minced, and slowly brought to the boiling point with water, yields nearly all its goodness up, and its flavour and juice are so thoroughly extracted that even a dog will not touch it. (*Medicinisch—Chirurgische Rundschau*, August, 1875.)

Propylamin in Acute Rheumatism.—This remedy, which was first recommended by a German army surgeon, has been used with remarkable success in the Garrison Hospital at Dresden. According to his report in the *Berlin Klin. Wochenschrift*, Staff-Surgeon Dr. Leo treated twenty-eight soldiers exclusively in the manner first tried by Dr. Loewer, of Altenburg. Of a solution of one gramme of the drug in 120 of peppermint-water, with 10 of sugar, a table-spoonful was given every two hours; altogether from three to five grammes were so taken by each patient, whose limbs were bandaged with cotton-wool and cardboard. All the twenty-eight cases suffered from multiple joint affections; in fourteen cases the disease appeared for the first time, in the other fourteen it was recurrent once or repeatedly. Five cases were complicated with slight, five with severe affection of the heart, one with acute œdema of lungs, and one with diphtheria. All were restored to perfect health and military duty except one, which required a course of the Teplitz waters, though there is a certain prospect of his ultimate fitness for service also. The average duration of the illness in these cases was 17·7 days per head; none was discharged before full recovery was proved by increased weight of body and gymnastic exercises. The effect of propylamin is summed up by the author to have been marked by the following points: — 1. The disease becomes very soon subacute, and remains so to the last. 2. The sedative effect on the nervous system is shown by decreased tension in the circulatory apparatus; pulse and respiration become slower, and high fever decreases within thirty-six hours. 3. With at first profuse, then more gentle perspiration, pain decreases very markedly. 4. The colour of the skin acquires a peculiar greyish tint (?) 5. Sleep quickly returns, and is not interrupted by pain. 6. With a cleaner tongue appetite returns fast. 7. The quantity of urine is not much increased; it is mostly clear and transparent, only slightly acid, and with little sediment. 8. All patients took the drug without dislike; it was never applied externally. The discrepancy of results in the use of propylamin Dr. Leo ascribes to the great differences in its preparations. According to the careful analysis of Petit, the amount of alkali in the officinal drug varies from 0·02 to 0·55 in 1 gramme. This may be due to the defective mode of preparing it, or to the variable constitution of the herring-brine from which it is made. (*Lancet*, November 6, 1875.)

The Treatment of Obstinate Vomiting connected with Pregnancy.—Dr. E. Copeman, of Norwich, observes:—Several different conditions of the uterus have been referred to as causes of sickness during pregnancy; for instance, Dr. Graily Hewitt attributing it to version of the cervix producing constriction of the inner os, and stating that the rectification of these displacements will cure it. Dr. H. Bennett looks upon inflammation and ulcerations of the os and cervix as the cause, and the use of the proper remedies for these affections the cure. M. de Saint-Germain has related a case in which he used M. Tarnier's dilator for the purpose of producing abortion, and immediately afterwards the vomiting ceased and did not recur, although the expulsion of the ovum did not happen for many weeks after the sickness had subsided. Dr. Copeman's own opinions as to the cause or causes of this complication of pregnancy are not yet sufficiently matured to enable him with certainty to afford any positive explanation; but he is inclined to believe that in such cases there is always some irritating condition present which induces a strain upon the neck of the uterus, or perhaps also on other parts of the uterus, exciting that organ to a disposition, so to speak, to get rid of its contents. —Whilst waiting in the reception-room previously to the public dinner of the British Medical Association in Edinburgh, a gentleman introduced himself to Dr. Copeman that he might relate a case of almost fatal vomiting during pregnancy which had recently occurred to him. He stated that the case was an extreme one, that he thought himself that nothing but emptying the uterus would save the patient's life, and that her husband utterly despaired of her living many days. He then added: "I had recently seen your paper in the *Journal*, and, in order to calm the utter despondency of the husband, I ventured, *solely on the strength of your published experience*, to promise him that, after a certain operation, his wife's life would not only be saved, but that she would be well in a few days. I dilated the os uteri as you recommend; her sickness immediately stopped; and, to the astonishment of the husband and to my own amazement, she went steadily on to recovery." Dr. Copeman relates two other cases in which similar treatment was adopted with success. (*British Medical Journal*, November 6, 1875.)

The Rapid Dilatation of the Urethra in Women.—Professor Spiegelberg remarks that the great dilatability of the urethra in women has long been known. Large stones have been extracted or passed from the bladder; and in cases of masturbation the urethra has been so much dilated that intercourse has been effected through it. Its dilatation for various reasons has often been practised by the surgeon. Its rapid dilatation is, however, of recent date. It is very painful, and can therefore only be undertaken after the administration of anæsthetics. Either the finger or specula, specially designed for this purpose, may be employed after the external orifice has been incised (Simon). The operation is completed in a few seconds; the bleeding that accompanies it is slight and always free from danger. At most it is only sufficient to interfere with the ocular, but never with the digital, examination. The canal may be enlarged by this means almost to the diameter of an inch without danger. Incontinence of urine is a rare subsequent event. Spiegelberg adopted this measure with great success in the treatment of a case of cramp of the bladder. A woman, aged 24, who had had a child a year previously, consulted him for difficulty of micturation, which first made its appearance after her confinement, at first experienced only at intervals, but subsequently more frequently, whilst it had become more troublesome. The ordinary means of hip-baths, &c., had proved useless, and a ring, introduced for a presumed anteversion, only produced great irritation and discomfort. Evacuation of urine was performed every half hour, was very painful, in jets, and accompanied by tenesmus. The patient was much depressed. The vulva and urethral opening were reddened. The projection into the vagina of the urethra thickened, the urine bright and clear, the introduction of a callula very painful, and after its withdrawal a little blood escaped, uterus normal, no stone. Spiegelberg suspected the presence of a small polypus in the upper part of the urethra or neck of the bladder. He performed sudden dilatation with a Busch's dilator. On introducing a Tobert's intra-uterian speculum, he saw at the upper and narrowest part of the urethra an elongated sore and granulating surface about half an inch long, which did not bleed. He touched it with nitrate of silver, and complete recovery followed. A case of fissure of the neck of the blader was treated in the same way, and made a rapid recovery. Spiegelberg associates these cases with fissura ani, which also frequently occurs after confinements, and in which forcible dilatation is a sovereign remedy. There are a number of cases of so-called cystitis and urethritis and of neurosis, with painful contraction of the bladder, resembling vaginismus, in which forcible dilatation proves the best means of cure. In one case Spiegelberg discovered, by means of rapid dilatation, a polypus in the lower part of the bladder, which had been for years the cause of trouble, and in the same way he punctured a case of hæmatometra not to be reached per vaginam. (*Berlin Wochenschrift*, 1875, No. 16.)

On the Treatment of Lead Colic by large Enemata of Luke-warm Water.—Dr. Rieslaud, of Wurzen, in Saxony, writes, strongly recommending the use of large clysters of luke-warm water in lead colic and constipation. He used an irrigator, and introduced on one occasion nearly a gallon of water, and on two or three other occasions about two-thirds of this quantity in the same patient, a plumber, aged 50. The results were relief from pain and the passage of a large quantity of fæces. Opium had previously been given, and castor-oil was administered afterwards, so that the case can hardly be quoted as a pure example of the success of the method recommended. (*Berlin Klin. Wochenschrift*, May 25, and *London Medical Record*, September 15, 1875.)

Researches on the Physiological Properties of Aconite and Aconitina.—M. Guillaud, in a thesis on this subject, asks, Does aconite, or rather the *Aconitum napellus*, owe *all* its properties to the aconitina that it contains, and can the latter be substituted for it? Schroff, and more recently M. Gubler, have sought to establish a distinction in stating that aconitina was only a narcotic, whilst aconite was both a narcotic and an acrid. M. Gillaud, however, believes from an examination of all that has been recorded of them, that their action is identical, and may be summed up in these words: that they are capable of producing disturbance of the alimentary canal, of the motility of vision, of respiration, and of the circulation, with conservation of the functions of the brain till death takes place, as it ultimately does, by asphyxia or syncope. Three opinions have been expressed in regard to the action of aconitina. (1) By

Holtot and Liégeoris, and more recently by Bœhm and Wartmann, it is a poison that paralyses the central nervous system. (2) By Aschscharumow and Gréhant it is believed to be a poison paralysing the periphoric motor system. (3) Lastly, by M. Leven, it is held to be a poison attacking simultaneously the central nervous system and the muscular system, and paralysing both. In view of these discrepancies, M. Guillaud took up the subject. His experiments were made on various classes both of the vertebrata and of the invertebrata in the physiological laboratory of Montpellier, and the poison was injected subcutaneously in solution in water, with the addition of a few drops of acetic acid. Many of his experiments gave results in opposition to those of previous experimenters. Thus, M. Leven stated that an animal poisoned with aconitina died without convulsions tranquilly as in death by veratria and digitaline. This is an error. Convulsions are never absent during the first period of poisoning in healthy animals not anæmic from fasting, and even when the convulsions have ceased the muscles long remain irritable to induced currents, which is in direct opposition to aconitina being a muscular poison; on the other hand, M. Gréhant considers that aconitina first paralyses the motor nerves; and that when given in small doses it acts like worara. This is also the opinion of Aschscharumow. M. Guillaud considers that this is not a correct view, and these are the facts he regards as being in opposition to it. In addition to the circumstance that the paralysis of the motor nerves is only secondary, and that it only occurs like central paralysis after a period of hyperæsthesia, it is, which is very important to note, always consecutive to this last paralysis. At first, when an animal is poisoned, the slightest touch, any sound, is sufficient to agitate it strongly. The sensibility then gradually becomes more and more obtuse, and when pinching of the skin or even irritation of the spinal cord no longer produces any effect, an induced current applied over the course of a motor nerve still causes the muscle to contract for some time; the excitability of the nerve appears in fact to die out from the centre to the periphery. If one of the posterior members of the leg of a frog be preserved from the action of the poison by a ligature, contractions occur in the ligatured leg as intense in degree as in the opposite one; and the contractions that ensue on pinching the skin are also equally energetic on both sides—a sufficient proof that, in the first instance, aconitina acts neither on the motor nerves nor on the muscles; at a later period the motor nerves and muscles become successively affected, and the foot preserved alone remains excitable. M. Guillaud's observation of the action of aconitina on the heart are again not conformable to the results obtained by Aschscharumow and Gréhant. These observers find that aconitina in the large dose (for a frog) of a milligramme, first stops the action of the heart, even before it has been able to distribute the poison to the system, and the motor nerves are then not poisoned because they have scarcely received any of the poison. But according to M. Guillaud the heart, whether the dose be large or small, first shows the effect of the poison by beating rapidly, then more slowly, some seconds intervening between the beats; but it does stop till reflex movements have ceased, this of course taking place earlier with stronger doses. The hearts of frogs excited and placed in solution of aconitina seem to be acted on slowly, continuing to beat sometimes for ten minutes, as long in fact as a heart placed in a saline solution. M. Guillaud describes a series of phenomena during the earlier stages of the action of aconitina—viz., disturbances of locomotion, disordered movements, rapid and interrupted respiration, salivation, excessive secretions—all phenomena indicating hyperæsthesia of the nervous centres. The hypersecretions may be regarded as analogous phenomena to the exaggerated muscular contractions, since Rouget has demonstrated the existence of secretory nerves passing to the poison glands of the dorsal natatory membrane of the larvæ of the salamander. The author, resuming his researches, distinguishes three periods in aconite poisoning—a period of contraction, a period of deliquium (*resolution*), and a period of muscular death. Aconitina acts essentially on the centres of the spinal cord and medulla oblongata by first augmenting these excito-motor functions like strychnia and the salts of silver. It then gradually paralyses them. In regard to the encephalon, the centres of voluntary movements are attacked and much enfeebled, whilst the sensory centres remain, in part at least, uninjured. Aconitina, then, paralyses successively the sensory nerves, the motor nerves, the sympathetic nerves, and then the muscles. Variations in the dose cause no alteration in the order of these symptoms. It affects the respiration through the medulla oblongata, and not otherwise, and by this action causes death in the higher animals. So also aconitina only acts on the heart, eye, and pupil, through the intervention of the nervous system. Its essential action is, in fact, as Hottot and Liégeoris originally maintained. (Abstract in Brown-Séquard's *Archives du Physiologie*, t. ii., ser. ii., Août et Septembre, 1875, p. 766.)

Treatment of Abscess of the Breast.—A point of practical surgery which is of frequent occurrence has been brought by M. Gillette before the Society of Medicine of Paris. The question, namely, whether an abscess of the breast should or should not be opened. We are here speaking only of parenchymatory abscesses, for superficial ones of course open *per se*, and in regard to submammary abscesses, all surgeons agree that they should be opened as soon as it is clear that they have formed. Since the occurrence of several fatal cases from erysipelas, in consequence of parenchymatous abscesses opened by the bistoury, some surgeons, M. Gosselin amongst others, are in favour of waiting and allowing the abscess to open spontaneously. M. Polaillon, again, maintains that by this method of treatment the opening left is the smallest possible, which is a matter of importance. On the other hand, there are surgeons who make a free and crucial incision into the breast without considering the liability there is to the entrance of germs of infection, or the possibility of fistulæ consecutive to the division of the galactophorous ducts. Between these two opposite methods of treating abscesses of the breast, there is still a third, which consists in puncturing the abscess, or at least of making a very minute opening into it. M. Gillette proposes to open the abscess not with the bistoury but with Vienna paste. The objections to this plan are, however, obvious. There is the difficulty of reaching the abscess if it be deep, the danger of giving rise to fistulæ, which is greater even than after the use of the bistoury, and lastly the cicatrix, which is much more apparent than by either of the other methods. (*Gazette Médicale de Paris*, No. 42, 1875.)

Treatment of Epithelionea by an Arsenical Paste.—Dr. Felix Vencourt, of Verdun, remarks that it is only by recent researches that any distinction has been made between pseudo-cancer, cancroid, or epithelionea, and true cancer, and that even now it is difficult to form a diagnosis in some cases. Generally speaking, however, epithelionea may be regarded as proceeding from the prolification of epithelial cells and to consist of masses of tesselated epithelium enveloped by connective tissue. In regard to cancer the most various opinions have been advanced. Some, as Waldeyer, consider all cancers as derivations of epithelium, others, as Wagner, maintain that there are two forms of true cancer, an epithelial cancer and a connective tissue cancer. Virchow believes that the presence of a new formation of connective tissue distinguishes true cancer from cancroid, and M. Robin wishes to abolish the word cancer, considering that the affections included under this head are only of importance in consequence of the general constitution of the patient. Hence we may still say with Richeraud that cancer is a disease as difficult to define as to cure. In regard to the treatment of epithelionea M. Neucourt desires to show the value of the local application of arsenic. The special preparation he has used with most advantage, after trying many, has been the formula of the ancient French codex, which consists of cinnabar sixteen parts, dragon's blood sixteen parts, arsenic eight parts, thoroughly mingled. The arsenic is here in the proportion of one-fifth. Hence it should not be applied to any surface larger than a threepenny piece at one time, and about a week should intervene between each application; a paste should be made with a little gum water and a layer of about an inch applied. The pain lasts for a day or two, and is accompanied by considerable swelling of the tissues, at which no alarm need be felt, but of which it is prudent to forewarn the patient. M. Gillette states that after long use of the paste he has found it has caused the disappearance, even before the cicatrisation of the cancerous ulcer, of ganglionic enlargements in the neighbourhood and removed indurated masses. (*Archives générales de Médecine,* Nov. 1875.)

The Action of Cod-liver Oil.—Buchheim maintains that the old opinion that cod-liver oil was valuable as a curative agent in consequence of the iodine that it contains, is unreliable, since it contains actually less and not more iodine than other marine products, as deep-sea fish, oysters, &c. The view also that it aids in the formation of some of the constituents of the bile has met with little favour. It would rather appear that the value of cod-liver oil is due to its being an easily digestible fat of high nutritive value. Buchheim finds that the oil usually has an acid reaction; it contains, in addition to the fatty glycerides, free fatty acids (oleic, stearic, and palmitic), the quantities of which varies in the different kinds of oil, but amounts in the clean variety to about 5 per cent. No biliary matters are present in the oil. Its value, according to Buchheim, depends on the presence of free fatty acids, since the absorption of fats is preceded to a certain extent, at least, by their disintegration into glycerine and fatty acids, and as the latter are introduced in cod-liver oil in their free condition, and thus easily unite with the alkalies of the intestinal juices to form soluble and easily absorbed soaps and combinations, a part of the digestive work is spared, which is of importance for weak persons with deficient power of producing the digestive juices. When cod-liver oil cannot be taken, the use of the free fatty acids is indicated, and these might perhaps be advantageously ordered without any admixture of glycerides. Unfortunately, however, stearic and palmitic acids are solids at the ordinary temperature of the body, whilst oleic acid, though fluid, easily becomes rancid, and can only at present be obtained in small quantities. (*Archiv. f. Experim. Pathologie Band,* iii. p. 118, and *Centralblatt,* 1875, p. 413.)

Therapeutic Action of Chlorate of Potash.—In a long paper devoted to this subject, M. Isembert observes, that it is now evident that the chlorate is without action on true gangrene of the mouth, and that Hunt committed an error of diagnosis in confounding noma with certain forms of fœtid ulcers—membranous stomatitis—for which it is acknowledged on all hands to be almost a specific. But what, he asks, is its mode of action? It is a topical agent which when absorbed reappears in the saliva and therefore is continuous in its action; when ineffective, enough has not been given, and a cure can be effected by applying it directly in a concentrated form. In mercurial stomatitis the chlorate is extremely serviceable, though less certain. The explanation of this is, that every foreign body which is eliminated by a gland modifies its secretion, and this modification may perhaps be an exaltation of the vital properties of the secreting organ which carries off with it the morbid state. The chlorate does not appear to have been found useful in scurvy. It is very serviceable in the simple glandular or ulcerated forms of angina, though it cannot be regarded as a specific. In croup it has not realised the hopes that were at first formed in respect to it: it has proved valuable as a topical agent in different kinds of chronic coryza, and M. Laborde has recently pointed out its usefulness as an expectorant and as a succadaneum to kermes in chronic bronchitis and broncho-pneumonia when on the decline. It certainly has not the contra-stimulant properties of the antimonials, but it facilitates the excretion of bronchial mucus, and it has the advantage of stimulating the appetite. Atonic ulceration of the skin, phagedænic ulcers, and fœtid wounds, are often favourably modified by the external application of the chlorate in concentrated solution, but its action appears to be inferior to that of iodoform in this respect. (*Gazette Médicale de Paris,* Oct. 23, 1875.)

The Physiological Action of Arsenic.—A student named Kossel undertook a series of researches in the Physiological Institute at Berlin, upon the influence exerted by cautiously increased, but ultimately fatal, doses of arsenic, upon the economy of dogs, but having to leave Berlin before they were completed, Gähtgens continued them, and gives the following as the results obtained. The occasion of the research was the remarkable parallelism which exists between fever (pyrexia?), diabetes, and poisoning with phosphorus in regard to the occurrence of remarkable increase in the disintegration of tissue albumen, in Voit's sense of the word. Poisoning by phosphorus is characterised in addition by the deposition of fat in the tissues of various organs, which also appears to occur after the use of arsenic and antimony. From an anatomical and pathological point of view the action of arsenic must be regarded as analogous to that of phosphorus, to which it presents so many points of analogy. If the ordinary view be accepted, that the fat is formed from the contents of the cells (of the peptic, hepatic, renal, canalicular cells) the question arises, what becomes of the nitrogenous constituents of these cells? To afford an answer to this question a dog, weighing 44 lbs., was insufficiently fed for fifteen days and then completely deprived of food, whilst arseniate of soda was administered by means of a sound. The experiment was continued for ten days, and careful examination was made of the urine and fæces. The result of this showed that the albuminous substances did probably undergo disintegration and that the nitrogen was eliminated in the form of urea which underwent considerable increase. (*Centralblatt f. d. Med. Wiss.* No. 32, 1875.)

Gelsemium Sempervirens as an Antineuralgic.—Dr. A. Jurasz of Heidelberg, having had his attention drawn to the effects of this drug in cases of neuralgic toothache, as detailed by Wickham Legg, and Sawyer, proceeded to try it in various cases of neuralgia, and corroborates the results obtained by those observers. The tincture was usually employed in doses of from five to twenty drops. The first case was that of a man who suffered from neuralgia of the first branch of the fifth nerve on the right side. Quinine was given internally, and veratria ointment was applied externally, without benefit. The action of the gelsemium was here excellent, the patient being perfectly and permanently freed from his pain in the course of three days, five drops only being given every eight hours. A second case was one of brachial neuralgia, a third of severe sciatica, and a fourth and fifth of trigeminal neuralgia, in all of which the results were satisfactory. On the other hand, however, it failed in a case of hemicrania of long duration, and in two cases of muscular rheumatism. (*Ibid.* No. 31, 1875.)

Gelsemium. Dr. O. Berger (*Centralblatt*, No. 44, 1875), on the other, hand states that the results of experiments with this drug on patients, both the tincture and extract being used, have been in the highest degree unsatisfactory. The greater number of the patients were the victims of trigeminal neuralgia, partly of peripheral and partly of centric origin, whilst others suffered from neuralgic pains in different parts of the body, and insomnia. He quite admits that the remedy possesses considerable activity, various unpleasant symptoms having been experienced by the patient, as vertigo, diplopia, ptosis, difficulty of moving the tongue, stiffness and trembling of the hands, numbness of the fingers, chilliness and general malaise, vomiting, and last though not least, dyspepsia. Even when the doses did not exceed seven grains of the extract.

Nutritive Value of Blood and some other Substances.—P. L. Paunve observes that the albuminous substances of the blood may be advantageously used as nutriment in the following form. The blood must be diluted and coagulated, the coagulum fused, dried, and pulverised; the powder will last many years without alteration, and be always serviceable for food. It contains 10 per cent. of water and one per cent. of ash, of which last 0·64 per cent. is insoluble. The results of Panuve's observations may be shortly summed up by saying that if the powder be supplied to dogs as food about 8 per cent. is excreted in the fæces and the remaining 92 per cent. is absorbed. 2. The value of eighty-four grammes of the powder as food, measured by the amount of urea eliminated, is about equal to 375 grammes of lean meat. 3. When fat and starch are given in excess far more carbonic dioxide and water are excreted than when the food consists of albuminous substances in general, and especially of blood powder. In order to preserve the normal amount of carbon in the body, if blood powder be used, it is only requisite to supply half the amount of carbon, as with a mixture of 72·6 per cent. barley meal, and 18·4 per cent. fat. 4. The addition of potassium phosphate to the food was without influence upon the amount retained in the body. 5. Dogs can be kept for three months in excellent condition when fed exclusively on barley meal (Gerslengraupe), fat, water, and common salt. The barley meal therefore contains all the salts necessary for nutrition. The results are, however, still better if blood-powder be added. 6. On the addition of the albuminous substances of blood to the food, the quantity of blood-colouring matter increases. 7. The amount of salt required to be added to the food is very small. (*Nordsikt. Med. Arkiv.* B. vi. No. 19.)

Treatment of Leukæmia.—Dr. Ordenstein, of Paris, observes that syphilis probably plays an important part in the ætiology of leukæmia. In one case of lienal leukæmia that fell under his care he ascertained that the father of the patient had suffered from syphilis, and at once commenced an anti-syphilitic course of treatment. Various other methods had been adopted without success. The liquor of Von Swieten was prescribed for some months with exceedingly good results.

Action of Quinine on Muscular Fibre in General.—In a long and carefully written article on the action of quinine on the circulatory and muscular systems, Dr. Chirone asks, Has quinine an electric action on the uterus? and replies absolutely in the negative; but he shows it has a distinct action on the whole muscular system of organic life, and consequently on all organs that contain smooth muscular tissue, the uterus amongst the number. He next asks whether this action is displayed on the virgin uterus, on the organ during menstruation or in gestation, and replies, that the more the uterus is developed the greater is the action of the quinine upon it. Owing to its action on the circulating system leading to an augmentation of the venous pressure, quinine has a tendency to bring on or increase the menstrual discharge, whilst, on the other hand, by its action on the unstriped muscular tissue it has a tendency to reduce it. Hence the ultimate result depends on the predominance of one or the other of these actions. Thirdly, he asks, Is quinine capable of causing abortion or premature labour? and answers in the affirmative. Lastly, he inquires whether quinine is absolutely innocuous for mother and child, to which he also returns an affirmative answer. (*Lo Spermaticulate Fascicolo,* ii. 1875.)

Strapping the Breasts to Prevent and Arrest Lactation. —Dr. Munson states that he has adopted this plan with success in a large number of cases, not only to prevent lactation, but to arrest it after the flow has commenced, when it has been desirable to dry up the milk after the death of the child, or for ulcerated, retracted, or imperfectly developed nipples. The first strap should be put on in such a manner as to hold the breast well up by itself, whichever direction it is made to take. He usually commences by placing a strap laterally beneath the breast, about half way between the nipple and lower margin, drawing the gland well up and attaching one end high up on the sternum, and the other end high up under the arm. The next strap is placed at right angles to the first, close to the nipple. Apply to breast, first draw it well up and fasten upper end, letting it pass over the shoulder, then draw down lower end firmly and fasten it. Holes must be cut for the nipple through the strips that pass over it. This is to allow the milk which may ooze for the first few hours to escape without burrowing beneath the plaster, pulling it off, and making a hot disagreeable irritating poultice. Several thicknesses of soft cloth should be placed over the nipple to absorb the milk that escapes, and these should be renewed as often as they become saturated. He has found a timely application of this plan of strapping almost sure to arrest commencing mammary abscess. (*New York Medical Journal,* Nov. 1875.)

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[*] ⁂ Any of the foreign works may be procured on application to Messrs. DULAU, of Soho Square, W.C.;—WILLIAMS and NORGATE, of Henrietta Street, Covent Garden, W.C.;—or BAILLIÈRE, of King William Street, Charing Cross.

Department of Public Health.

ON THE RECENT PROGRESS OF EPIDEMIOLOGY IN ENGLAND.

BY J. NETTEN RADCLIFFE.

President of the Epidemiological Society.[1]

GENTLEMEN,—In fulfilment of the first duty which devolves upon me as President of the Society, I propose to submit to the Members a brief history of the Society, considered mainly with reference to the progress of epidemiology in this country since its establishment. The subject, if limited so far as the Society itself is immediately concerned, is so large in the aspect from which I desire to view it that I should have hesitated to deal with it in the space of time I can with propriety occupy this evening, were it not for the feeling that it is sufficient for me to indicate, rather than work out in detail, before the present audience, the different matters upon which I am about to enter. Much of what I have to say will probably be regarded as too largely influenced by a restricted personal experience. I do not pretend, and it would be unbecoming of me to attempt, to treat my subject in the manner of prominent teachers and others of world-wide experience who have preceded me in this chair. But I venture to think that it may not be uninstructive to know how some of the questions I have to touch upon present themselves to the mind of one of the day-labourers—the journeyman workers—in epidemiology.

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[1] The Address delivered at the Opening of the Twenty-fifth Session of the Society, Wednesday November 10, 1875.

The Society was founded in 1850. It was one of many indications of the vivid interest aroused in questions relating to the public health by the cholera epidemic of 1847-48, and was, I believe, the first association formed for the special study of such questions. Although constituted for the investigation of epidemic diseases, it included in its operations all questions, legislative and administrative, relating to the prevention of these diseases. At the beginning it gave attention also to other questions regarding the public health; one of its earliest labours referring to the supply of the labouring classes with nurses in time of epidemic and other sickness. While, therefore, primarily medical in conception it touched at many points matters common in interest to the profession and the public at large, and on this account as well as on account of the close relationship of the study of epidemiology to that of public health, it sought and received support outside the ranks of medicine. Indeed, anticipating a discussion of later years, it admitted ladies among its members.

Few Societies, perhaps, ever commenced operations with a more generous conception of what was possible to voluntary associations. The Society contemplated becoming a medium of communication between epidemiologists in all parts of the world and of thus promoting the study of epidemics by a readier interchange of thought. With this object it particularly sought for co-operation in the Army and Navy, in India and the Colonies, and endeavoured (not without success) to bring workers in epidemiology in all parts of the empire into friendly relationship. It proposed also to become itself an investigating agency, instituting inquiries by paid representatives, and furnishing all requisite apparatus needed for the furtherance of investigation, meteorological, chemical, and other. Superbly disregardful of ways and means, however, it restricted its sources of current income (as it still does) to members resident within the metropolitan area, and while hardly a name of note in epidemiology, from the time when it began its operations until now, has been absent from its roll of foreign, Indian, Colonial, and non-resident members, its funds were made to depend strictly upon its success in London. Its aim was cosmopolitan, its finance local. An acute but friendly critic, still a member, Dr. Rumsey, pointed out early in the Society's history that the duties it had undertaken to perform as to investigation, were only practicable with the national purse to draw upon, and that it must prepare for gradual extinction. He added, "Happy for the country will it be if that event be caused by the institution of an efficient machinery by the State for scientific, unprejudiced, and continous inquiry."[1] We shall presently see in what manner and to what extent this forecast has been confirmed.

It soon became obvious that the income of the Society was by no means commensurate with its projects. Too medical to enlist much popular support, too popular to retain undamaged its scientific pretensions, and too specialised in its objects to secure the sympathy of the mass of the profession, the Society was not slow to learn that such influence as it was wishful to exert in promoting the study of epidemic diseases must be attained in other ways than those first attempted.

But other circumstances, in addition to cost, soon contributed to modify considerably the original action of the Society. In 1856 the Association of Metropolitan Officers of Health was formed, and those officers who were members of this Society found in the Association a more congenial field for their combined activity. In 1857 the National Association for the Promotion of Social Science was established, and as part of its organization a Public Health section was instituted. The first President of this section was the late Sir Benjamin C. Brodie, then one of our Vice-Presidents. The popular element of our Society found in the new Association a more fitting centre of development, and practically this feature of the Society's work then came to an end. In 1858, with the dissolution of the General Board of Health and the transference of their functions to the Privy Council, began, at the suggestion and under the direction of Mr. John Simon, the series of epidemiological investigations which have since been carried out by special inquirers at the cost of the Government. What Dr. Rumsey had hoped for two years before was thus set in process of accomplishment, and the Society has the gratification of knowing that the inaugurator of this inestimable change, Mr. Simon, and the two gentlemen first engaged in the special inquiries, Dr. Headlam Greenhow and Dr. Burdon Sanderson, were members of this Society, the first-named and the last-named still remaining with us. In 1861 the Army Medical Department commenced the publication of an annual volume of statistical, sanitary, and medical reports, and thus was furnished to the Army Medical Staff a means for the publication of special investigations such as no society could compete with, and which effected, in a way which the Society had hardly dared to hope for, one of the objects it had striven after. The Director-General of the Department at this time, Dr. James Gibson (afterwards Sir James Gibson, K.C.B.), was one of our Vice-Presidents, and the head of the medical branch, Dr. Mapleton, was our Treasurer. In 1864, in accordance with a recommendation of the Royal Sanitary Commission on the sanitary state of the army in India, sanitary commissions were appointed in the several governments of India, and that remarkable system of sanitary organization throughout India, and not less remarkable system of reporting, was begun, which has proved so prolific of epidemiological research in that country. Here again the Society had the gratification of witnessing the development of agencies and in the most desired form such as it had been wishful to foster; here again several of its office-bearers (Sir Ranald Martin, Dr. John Sutherland, and Dr. William Farr, all members of the Royal Commission) played an important part in their development. In 1865, the Navy Medical Department began the publication of an annual report, similar to that published by the Army Medical Department, the late Dr. Bryson, one of our most active Vice-Presidents, being then the Director-General, and Dr. Mackay, the Medical Officer at the Admiralty, our Naval Secretary. Each of these important changes had an immediate effect upon the working of the Society by the practical closure or considerable limitation of some of the most important fields of the Society's labour.

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[1] Dr. Rumsey, *Essays on State Medicine*, 1856, pp. 133-135.

Then the formation of the Public Health Section of the British Medical Association furnished the means of associated action among the profession generally which it was matter of experience that a metropolitan society could not hope to afford; and the recent establishment of an epidemiological prize, by

Dr. A. P. Stewart, for competition among members of the association is a gratifying proof that the study of epidemiology by them will not be suffered to slacken for want of an inducement.

By these various developments of the means of research and of the resources for publication in the various fields the Society had proposed to cultivate, the functions of the Society became largely modified. Its international relations, so to speak, alone remained unaffected. But if (as is probable) the project of the International Sanitary Conference, held at Vienna in 1874, for the establishment of an International Epidemiological Commission, should be carried into effect, a great international agency will be available for this part of the Society's work.

The Society, then, stands now in this position :—It has witnessed during the twenty-five years of its existence almost all the objects which it was the first to set itself by associated effort to accomplish, taken up by better agencies which could secure them. In other words, it has witnessed the substitution, for the efforts of a single combination, of the efforts of a plurality of combinations or agencies ; with a proportionate gain, in every instance, in dealing with the peculiar subject for which the combination or agency was established. In the development of these changes the members of the Society, and the Society as represented by them, have not played an inconspicuous part. If we regard the changes with reference to the progress of epidemiology the gain has been immense ; if we regard them with reference to the Society, we shall observe that gradual progress towards extinction which Dr. Rumsey foretold. But there are extinctions and extinctions. There are extinctions of complete failure ; and there are extinctions of complete success, when the agency by which it has been obtained or which has contributed to it is no longer needed. Such extinction as may be predicated of this Society belongs rather to the latter than to the former category. If the Society judged by its first projects may be said to have failed, it has succeeded in other ways not dreamt of at the time of its formation, and with a success which renders petty by comparison any efforts which could have been made by a single voluntary association, however lavishly supported.

The Society has, indeed, been undergoing a process of transmutation, rather than extinction. In this process several of its former functions have come to an end, but others, consistently with the present state of epidemiology, have become developed. The progress of this transmutation may be usefully studied in the series of volumes of the Society's Transactions and in its various reports. It has not yet been fully accomplished. Influenced by a right feeling of respect for the early constitution and projects of the Society, we have been unwilling to extinguish all remnants of them. But (if I may so speak) from the silver of combined epidemiology and public health, there is now emerging the gold of scientific epidemiology. With the completion of this transmutation, in which I am very wishful to play the part of *magisterium* (if you will permit me thus to play in the alchymical sense upon the term descriptive of my present functions), the Society in its form as originally designed for the investigation of epidemic diseases will become extinct, and it will assume the form of a Society for the promotion of epidemiological science. Occasion for the completion of this change, and which renders it desirable, will be referred to before I close.

And now, gentlemen, I pass from this brief sketch of the remarkable development of voluntary associated and of departmental activity in subjects concerning epidemiology during the past quarter of a century, to the not less remarkable progress of epidemiology. It is as difficult for individuals who commenced the study of medicine since the period of the formation of this Society to apprehend the state of some of the most important epidemiological questions at the time of its foundation, as it is for those who commenced their surgical studies after the discovery of chloroform to comprehend the state of the operating-room, during operations, before that discovery. Judged by years the time which has elapsed is insignificant; judged by ideas a whole age seems to have been accomplished. The event which characterised the commencement of this new era of thought (for such it has been) will serve as a text for the subsequent observations I propose to make, for I am concerned to indicate the particular tendencies of thought of the period, rather than the special facts. To do the former may be practicable in an address like this; [to do the latter would be impossible within the limit of time devoted to a single meeting.

The Society was established in the mid-year of the three (1849–51) during which Sir William Jenner (lately our President), confirming and extending previous researches of Dr. A. P. Stewart and others) made the specific distinctions of typhus, typhoid, and relapsing fevers, the common property of the profession. When this happened, not only was it customary to regard the continued fevers of this country as one disease presenting several varieties, but the distinguishing of these varieties, except as a matter of conventional convenience, was expressly deprecated by the most distinguished teachers. Sir William Jenner's researches and writings on typhus and typhoid were a revelation. The bewilderment experienced (especially by students who like myself were then fresh from observation of "epidemic fever" in northern towns in 1847) in endeavouring to reconcile typhus, typhoid, and relapsing fevers, and, I may add, occasional cases of cerebro-spinal meningitis, treated in the same wards, with current teachings as to continued fever at once passed away, and with it the difficulty which had made all true advance in the etiology of continued fever impossible. The results of this revelation as far as relates to the continued fevers may be read at large in Dr. Murchison's great work. But Sir William Jenner's writings at this period, as we now know, were not merely a revelation. They were, indeed, much more, they were an instauration of true method. They brought medicine back from a seventh heaven of meaningless verbiage, into which it had gone astray in treating of epidemics and their causes, to the true starting-point of all epidemiological knowledge, observation at the bedside. They recalled epidemiology from the outer spheres and semimystical speculation to the more moderate compass of a hospital ward or of a bedroom, and substituted for the cosmos a common bedstead. In other words, they made clear that the difficulties which had beset a true knowledge of the etiology of the most important class of epidemic diseases in England had arisen solely from an imperfect discrimination of them. This great lesson has been the ground-work of sound epidemiological progress since that day, and there is not an epidemic disease in our nosology of which an augmented insight has not been obtained by it. It is no derogation of Gregory to say, even of so well-known a disease as small-pox, that our knowledge of it as an epidemic has gained much in precision from the labours, essentially clinical, of our fellow-worker, Mr. Marson. A close clinical study is only now clearing away the doubts which trouble many respecting the true character of such familiar diseases as chicken-pox and croup. How much we epidemiologists have lately learned and have still to learn of the early course and manner of development of the common exanthematous disorders, scarlet fever, measles, &c., was abundantly illustrated before the Society, the last Session but one, by our Honorary Secretary, Dr. William Squire, in his paper on the "Period of Infection in Epidemic Disease," which might have been written at the bedside. The appearance of diphtheria in our list of epidemic diseases was owing more, perhaps, to an improved discrimination of disease than to a reappearance, or reintroduction, or new development. So also of epidemic cerebro-spinal meningitis at a later period. Again, and this too through clinical work, we are to-day witnessing differentiation taking place between various forms of erysipelas and the severance of erysipelas from other diseases with which in essence it had been held to be identical; every step gained in this discrimination clearing away some difficulty in etiology. To a like amended discrimination we look for our first measure of enlightenment regarding the hitherto almost untouched subject of epidemic diarrhœa, and regarding certain obscure phases of pneumonia, and perhaps, even, of winter bronchitis. The "anomalous exanthems," as we have been accustomed to term in this room those eruptive febrile diseases which in some aspects simulate scarlet fever, in other aspects measles, and in all aspects often puzzle the observer, are anomalous simply from lack of a desired discrimination. Finally, as to the two choleras (home-bred and foreign, otherwise Asiatic) we wait until an amended clinical discrimination or improved pathology shall have settled doubts which a different natural history has not put at rest.

It is interesting to note how the same process of discrimination of fevers which has exercised so profound an influence upon the study of epidemics in this country is being carried out with not less important results in respect to the fevers of India. Some who are familiar with Indian medical and sanitary literature will not have failed to observe how the nomenclature of the continued fevers of this country is being substituted for terms implying malarious origin. In other words, there have been discriminated in India very lately typhus and typhoid fevers, and there is good reason to believe that in that country, as here, very much of the difficulty which has surrounded the etiology of the fevers commonly prevalent has been a difficulty arising from defective discrimination. In proportion as this discrimination is effected, in proportion will the difficulties which are believed to be peculiar to the comprehension of Indian fevers be removed. A common clinical history and a common pathology presuppose a common natural history. Indeed, it may already be stated that typhus and typhoid in India are the same diseases as in England, and there is reason for the belief that the last-named disease is probably not less prevalent in the one country than in the other.

If any affect surprise that diseases now so familiar to us in this country, and distinguished from each other, as we now know, by so many characteristic signs, should at any time have been unrecognised here, and are still largely recognised in India, I would remark that such discrimination at the outset is a faculty perhaps the rarest in medicine, and requires the highest qualifications for observation. Our knowledge in this country rests on an accumulation of observation which is admirably shown in Dr. Murchison's work; and it must be remembered that the difficulties which interfered with a first discrimination here are trifling compared with those which interfere with such discrimination in India.

But an amended discrimination of disease was not the only great result which followed from Sir William Jenner's writings on typhus and typhoid. They exercised a not less important influence upon the notions as to "contagion" which were current at the time of their publication.

A few years before these writings, the question as to contagion or no contagion was dealt with by medical teachers much in the same fashion as the dialecticians dealt with their subject in the discussion *de Nasis* of Slawkenbergius's celebrated tale. They did not concern themselves with facts, they reasoned. Sir Thomas Watson demolished this manner of treating the subject in his well-known lectures, first published collectively in 1843.[1] "You will hear persons," he then said, "disputing about the *term* contagion, but such disputes can only arise from the want of a distinct definition of the sense in which it is employed. I understand a disorder to be contagious when it is in any way communicable from person to person." The generic sense in which *contagion* is here used has since that time been almost universally adopted by teachers in this country and on the Continent; and it is quite beside the mark to say of this word, as might be said of numerous other words in use, that the etymological signification is different from that which has become attached to it. But it was not until the discrimination of typhoid fever that it began to be clearly understood that there were *ways* of communicability of a disease previously unsuspected, and that diseases might be communicable in ways peculiar to themselves quite distinct from and altogether unlike the ways of communication peculiar to the more commonly known exanthematous affections. *The modes of* communication of typhus and typhoid, it was shown were as unlike each other as were their natural histories.

Few discoveries in medicine have borne and are still bearing such rich fruits. This discovery has prompted extended researches into the habits of diseases, and have led us to the detection of contagion acting widely, on the one hand, in surgical inflammations, and on the other hand, in chronic diseases such as cancer and phthisis.

Moreover, in this wider recognition and differentiation of the modes of contagion has been brought to light that knowledge of the conditional action of contagions which is perhaps the most notable characteristic of modern knowledge on the subject. It had at all times been recognised, since the attainment by medical observation of any degree of precision, that there were individuals insusceptible to the contagion of small-pox, and it has long been believed (although this is less capable of proof) that the same was true of the contagions of other exanthematous diseases, scarlet fever, and measles, for example It was known also that the contagions of these several diseases were more diffusive at one time than at another, and that an augmented diffusiveness did not at all times seem to bear a definite relation to the numbers of presumed susceptible among a population, but had also some seasonal and other cyclical relations. But in these diseases the action of contagion in their dissemination was so obviously the main fact of their etiology, that the conditions of its action as a scientific question had little thought given to them. But when typhus and typhoid were discriminated, this question assumed a different aspect. In the one case, typhus, the communicability of the disease was observed to be very markedly governed by states of aggregation and destitution; in the other case, typhoid, equally markedly by certain filthy states of the patient's surroundings. So definite in this latter case were these states, and of so local a character, that at first it was thought impossible by many to reconcile them with the notion of communicability of the disease. In like manner as to Asiatic cholera, a more prominent subject at the time of the Society's establishment, the tendency of the disease to localization in particular places which had certain characteristics in common with localities haunted by typhoid fever, was held to preclude the notion of communicability. Here, however, an erroneous conception of the efficiency of quarantine to prevent the propagation of cholera and other foreign epidemic diseases had confused the subject; it being largely held that the futility of restrictive measures in preventing their dissemination was fatal to the notion of their contagiousness. We now know that no measures of quarantine can be devised, except as "paper plausibilities" which can, as a rule, shut out the chances of transmission of a contagious disease from place to place. But a fallacy more serious, as of cardinal moment, rested in a prevalent assumption (due, no doubt, in the first instance, to the etymological consideration to which I have adverted) that the phenomena of contagiousness of one kind of communicable disease may be applied indiscriminately to determine the existence of contagiousness in another kind of disease with which it might have little or nothing in common. Thus the phenomena of diffusion of typhoid and of cholera have been gauged by notions derived from the mode of diffusion of small-pox, of scarlet fever, and of typhus. This fallacious line of research and argument is not quite extinct in this country and it has recently been vigorously sustained in India.

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[1] Lectures on the Principles and Practice of Physic, 1st Ed. 1843; Lecture 83, vol. ii., p. 654.

The localization of typhoid and cholera affords, indeed, the most decisive proof of the communicability of the diseases when each disease is studied from its own phenomena solely. I limit myself to two points only in illustration, namely, the influence of filth and of impure water in localizing outbreaks of cholera and of typhoid fever. Among the most important facts brought pre-eminently to notice by the researches into the epidemic cholera of 1847-48, by the then medical officers of the General Board of Health, were the effects of filth and of impure water in determining the local prevalence of the disease. The labours of these gentlemen with reference not only to the particular causes of localization referred to, but also with reference to the localizing causes of cholera in general, form an epoch in the history of research into the conditions of prevalence of that disease. The late Mr. Grainger and Dr. John Sutherland were among the most honoured members of the Society in its early days, and Dr. Gavin Milroy, whose name has been associated with the Society from the beginning to the present time, it is our pride to honour as chief amongst us. Facts of localization similar to those observed with regard to cholera were subsequently observed with regard to typhoid.

From the first it was recognised that filth, simply as such, and impure water, simply as such, were not the localizing causes, but some *particular conditions* of filth and of impure water. The research into the *nature* of these conditions has been peculiar to the epidemiology of recent years. It has been shown now that the particular filth concerned in their localization was excremental filth, but again not simply as such, but excremental filth in some special state, and pre-eminently the excremental filth of persons suffering from the diseases. It has further been shown that the localizing action of this filth has very definite relations to its distribution either in the soil or in cesspits, or in imperfect or improperly arranged drains, or in a water-supply with which it may have become mingled. To describe the excremental filth of persons sick of the two diseases as communicating the disease, and to speak metonymically of the disease as being thereby contagious, is to express briefly in common language a sequence of events of which the accumulated instances furnish proof, short only of demonstration, that the expression is also a scientific truth. For practical purposes, indeed, the probability is so high as to amount to a demonstration. Nay, more, the conclusion as to the relationship between the excremental filth here referred to and the propagation of the diseases is, in the present state of our knowledge, an unavoidable inference from the observed facts. I claim this as the crowning point of the later researches on this subject, the facts having been so carefully elicited and their sequence so clearly shown as to leave no doubt as to what should be the inference from them.

You will observe that the mischief arising from the several distributions of filth which I have referred to must exercise very different degrees of influence upon a population. The stools of typhoid or cholera patients deposited in a cesspit frequented by a single family or by several families, scattered widely on the surface of the ground or through the sub-soil, distributed in a series of drains common to many families, or finding entrance into the water-supply used by a more or less considerable population, represent very different powers of mischief according to the facility and area of distribution. This was the teaching of Dr. John Snow as to cholera, first discussed before this Society, and the teaching of Dr. William Budd as to typhoid —teachings destined to bring about in respect to cholera and typhoid not less beneficial effects for populations at large than have been effected by Edward Jenner's discovery of vaccination. But these teachings are as yet so imperfectly understood that I shall diverge a little from the course I have been pursuing to make a few observations on them.

Let me ask you to note that I am speaking solely of the conditions of prevalence of cholera or typhoid in a particular locality, the disease having shown itself there. I say nothing of how the disease came there, or of the ultimate source of the disease; I speak solely of the conditions which determine its greater or less prevalence in a locality when the disease has once entered. Of these conditions, said Dr. Snow, of cholera, and Dr. William Budd, of typhoid, immeasurably the most important is the distribution of the excremental filth of those sick of the disease in the drinking water, as giving occasion to the readiest, most certain, and, in the case of a common supply, most general dissemination. Now this, as appears to me, well defined water-question, is still debated by some (I am simply recounting, not inventing) as a question of *the cause* of cholera; as a question of the propagation of cholera over tracts of country and over seas; as a question of scattered cases of the malady, two, three, or four cases in a community; as a question of the sole condition of localization to the exclusion of any other conditions, and, set aside, as of necessity it must be, as insufficient to account for the several phenomena.

And here let me indicate another misapprehension which has confused this question of localization and its bearing upon the communicability of typhoid and cholera. The relations of prevalence both of cholera and typhoid to porous soils, sodden with filth, early attracted the attention of English observers, Professor Pettenkofer has shown that in Munich, and inferentially in other places having like conditions of soil, this relationship has definite connection with certain states of humectation of the sub-soil. But he has failed to observe that, while thus opening out an interesting path of investigation concerning the conditions of endemic prevalence of typhoid, or of certain states of general prevalence and persistence of cholera in a locality, the question of sub-soil water concerns one only of the different series of facts as to localization. It refers, indeed, to one of the topographical conditions of prevalence, but fails when it is applied to the total facts of localization, and affords no explanation of those secondary localizations, if I may so phrase it, those localizations within localizations, which, in addition, English observers have so carefully studied. For instance, it may be granted that the typhoid generally diffused throughout London, as common, in 1873, followed on the porous strata within the metropolitan area a very similiar course in relation to variations in level of the sub-soil water to that observed in Munich. But such variations afforded no sort of help to the elucidation of the outbreak of the disease which occurred within a very limited locality of the western districts of the metropolis, also on the porous strata, and which pursued a course quite different from that of the typhoid distributed generally over the same strata elsewhere in the metropolis, and in the metropolis generally. Neither do such variations afford even an inkling of explanation of an outbreak of typhoid such as that which recently occurred in the suburbs of Glasgow, within an area of deep impervious clay, and which has been so admirably described by Dr. Eben Duncan. Nor in respect to cholera are they more available to explain the outbreak of cholera which occurred on the dense, impervious clay of Theydon Bois, in 1865; or the great localization of cholera in East London in the following year, which was peculiarly instructive in this regard from its occurring partly on the pervious strata of the metropolitan area, partly on the impervious alluvial clay of an adjacent suburb, the development and decline of the disease following the same course indifferently on both sorts of soils. Professor Pettenkofer, indeed, has confounded together in his general argument a number of very different questions, failing to see that there are localizations and localizations. This is now becoming clearly understood in Germany, and some of the most important illustrations confirmatory of the view entertained by English epidemiologists on this subject have been recently furnished by German workers.

The agency of articles of food in determining certain localizations of typhoid and probably also of cholera is one of the most interesting discoveries of modern epidemiological investigation. It extends, moreover, to other diseases of the zymotic class, notably scarlet-fever. The field of investigation which has here been opened by the application of the same kind of minute study of prevalences, which have been productive of so much additional knowledge in typhoid and cholera to other epidemic maladies, promises not less important results.

A somewhat familiar argument against the view of localization here advanced has been in effect that the reasoning adopted to explain one set of phenomena does not explain another and very different set of phenomena, for example, certain phenomena of immunity. I note the paradox for the purpose of observing of the implication involved in it, namely, that the view professes to exhaust inquiry; whereas, as will immediately be seen, its tendency is to develop further inquiry, by giving a clearer insight into the nature of the problems still to be solved, and by affording a sure starting-point for ulterior investigations. In other words, the view appears to me eminently *infective* of inquiry.

I have had occasion to observe that the opinion as to the contagiousness of the excremental filth of the sick of typhoid and cholera, notwithstanding the very high degree of probability which attaches to it, has lacked ocular proof. I would here briefly indicate the tendency of experimental research in this matter, and the relation of this particular item of research to the question of the morbific action of filth generally. The presumption from the observed facts of the dissemination of typhoid (and here I follow, and largely adopt the phraseology of the recent report of Mr. John Simon on the subject of Filth-diseases[1]) is that the bowels must teem with the contagion of the disease. Medical knowledge in support of this presumption has of late been rapidly growing more positive and precise; and at the moment of my present writing (Mr. Simon says, July, 1874, referring to Dr. Klein's researches), "I have the gratification of believing that under my Lords of the Council it has received an increase which may be of critical importance, in diseases which seem to give us for the first time an ocular test of the contagion of enteric fever; in the discovery, namely, of microscopical forms, apparently of the lowest vegetable life, multiplying to innumerable swarms in the intestinal tissues of the sick, penetrating, on the one hand, from the mucous surface into the general system of the patient, and contributory on the other hand with whatever infective power they represent, to the bowel-contents which have presently to pass from him" and which, the infection running its course "as with successive inoculations from man to man, by instrumentality of the molecules of excrement which man's filthiness lets mingle in his air and food and drink." The local affinities of Asiatic cholera, when present in this country, "have been always so close to those of typhoid, in respect to its associations (even apart from evidence which has been alleged on the direct communicability of cholera to the lower animals) are so parallel in the two cases, that no reasonable doubt," says Mr. Simon, "can, I think, be entertained as to the substantial dependence of cholera epidemics in this country on the opportunities which are ever widely spread for the above filthy method of infection." Then, stating how the whole pathological argument of the spread of the entero-zymotic diseases grew "among us in this country out of the very cogent facts which our cholera epidemics specially supplied, and to which the late Dr. John Snow, twenty-five years ago, had the great merit of forcing medical attention,' Mr. Simon observes that "the argument which applies to the bowel-discharges of cholera and enteric fever, and which in regard to them rests on very large quantities of detailed evidence, seems to extend by extremely strong analogy to every disease, whether nominally 'common' or 'specific,' in which the human intestinal canal is the seat of infected changes: chiefly perhaps to such diarrhœal and dysenteric infections as are exclusively or distinctively intestinal, but likewise, I apprehend, more or less, to every general infection (such as scarlatina) in proportion as it inclusively infects the bowels: and it would thus seem probable that air and water, having in them the taint of human excrement, must carry with them, whithersoever they pass, the seeds of current morbid infections."

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[1] Reports of the Medical Officer of the Privy Council and Local Government Board. New Series, No. II. pp. 13-16 (1874).

Mr. Simon then proceeds to explain that the intermediary mode of propagation of the several contagions through man's body as their birth-place, is but a part, and perhaps even but a subordinate part, of the faculty of filth to produce disease. And here I am wishful for you to note, as the chief aim of my observations, how the steady development of research from the time of Sir William Jenner's writings, leads legitimately and surely beyond the immediate subjects of study into collateral subjects of not less moment, and into previously unthought of fields of research.

Mr. Simon writes:—

> "I would mention it as among the most hopeful advances of modern preventive medicine, that some diseases, which, in the sense of being able to continue their species from man to man, are apparently as 'specific' as those which I

have above named, seem now beginning to confess in detail a birth-place exterior to man, a birth-place amid controllable conditions in the physical nature which is around us, a birth-place amid the 'common,' putrefactive changes of dead organic matter. Referring again now to what I have not pretended to be able to analyse in detail—the excess of miscellaneous, and in great part nominally 'common,' disease in filthy neighbourhoods, I would particularly wish to connect with that subject a reference to our growing scientific knowledge in the matter of the 'common' septic ferment. The pathological studies of late years, including eminently certain very instructive researches which Professor Sanderson has conducted under my Lords of the Council, have clearly shown that in the 'common' septic ferment, or in some ferment or ferments not hitherto to be separated from it, there reside powers of disease-production as positive, though not hitherto as exactly defined, as those which reside in the variolous and syphilitic contagia. Experimentally we know of this ferment, that, when it is enabled by artificial inoculations to act in its most effective way on the animal body, and even more when it has received a curious increment of strength which its first propagation within the living body seems to bestow on it, it shows itself one of the most tremendous of zymotic poisons. It rapidly in the one animal body develops disease which then is communicable to another: febrile disease, with inflammations numerous and intense, and including in marked degree one of the acutest known forms of intestinal inflammation and flux: disease exactly corresponding to certain very fatal and unfortunately not infrequent infections to which lying-in women, and persons with accidental wounds and the wounds of surgical operations, are most subject, but which also sometimes occur independently of such exceptional states; infections, chiefly known under the names of erysipelas, pyæmia, septicæmia, and puerperal fever; infections, which we sometimes see locally arising anew in unquestionable dependence on Filth, but of some of which, when arisen, it is perfectly well-known that they are among the most communicable of diseases. And a further, perhaps still more instructive, teaching of the artificial infections is this: that the 'common' ferment, which in its stronger actions quickly destroys life by seepticæmia, can in slighter actions start in the infected body chronic processes which will eventuate in general tubercular disease."

To return, now, to a previous observation. Among the conditions affecting the communicability of diseases I have referred to seasonal and other cyclical variations of the weather. The very definite relations of the several more important epidemic diseases to meteorological changes have been shown with peculiar clearness by Dr. Ballard in his several papers on the subject; and additional light has been thrown upon it by a very valuable report "On the Influence of Weather on the Mortality from Different Diseases at Different Ages," lately prepared for the Scottish Meteorological Society by Mr. Alexander Buchan, its meteorological secretary, and Dr. Arthur Mitchel, the Chairman of its Medico-Climatological Committee. It needs but brief study of the papers referred to to ascertain that a waxing and waning of the several contagious epidemic diseases discussed is presumably dependent upon varying states of communicability peculiar at the time to the contagion itself, or to the conditions under which it acts, or to the individuals exposed to it.

If now I briefly recapitulate what I have endeavoured to show, it will be observed that epidemiology, since the formation of the Society, has gained (*a*) in the discrimination of diseases; (*b*) that each stage of discrimination has cleared up difficulties of etiology; (*c*) that of the difficulties thus removed foremost have been such as were dependent upon erroneous conceptions about contagion, a clear knowledge of its conditional action having been obtained with much defined information of the conditions under which it acts; (*d*) that of the greater number of current epidemic diseases, and of the one foreign epidemic we have chiefly to deal with, namely, cholera, we have clear conceptions of the ordinary conditions of prevalence both local and general, social, topographical, and meteorological, and that of others the line of ulterior research is well defined; and lastly (*e*) that the way is, in fact, prepared for the further systematic study, previously unattainable, of the special periods of prevalence to which the term epidemic properly applies.

And now the veil has begun to lift which has hitherto shrouded the mystery of epidemicity, and the time long and patiently waited for and wrought for, has at length come when hopes may be indulged of pushing investigation successfully beyond the common conditions of prevalence of epidemic maladies.

Some years have elapsed since Inspector-General Lawson, one of our late Presidents, sagaciously divined that the periodical changes of telluric magnetism might afford a clue to those conditions of epidemic prevalence which are other than topographical. He anticipated, indeed, the direction of research in which the solution of further problems of epidemicity will most likely be found. A relationship between certain of these magnetic changes and the periodical movements of the sun's spots has been fully established. A relationship has also been observed, and is now being subjected by various observers to close investigation, between the same solar phenomenon and certain cyclical meteorological changes on the earth. To use an expression of Professor Balfour Stewart's, "there are strong grounds for believing that the meteorology of the sun and that of the earth are connected together." Finally, Professor Jevons has recently shown that the sun-spot period exercises an influence upon the price of corn. And here we get the clue to our further research into the more remote conditions which give rise to the larger phenomena of epidemicity. Taking a hint from Professor Jevons's phraseology we may say that there are good seasons of cholera, or of typhus, or of small-pox, or of other epidemic diseases, as there are good seasons of wheat, or of potatoes, or of other crops. It may now be possible to connect epidemics of periods of dearth (typhus, relapsing fever, &c.), and epidemics more directly influenced by meteorological changes (cholera, typhoid, diarrhœa, &c.) with certain cyclical solar phenomena. Already, I am given to understand, the attempt has been made, not unsuccessfully, in regard to the typhus epidemics of Ireland, but I have not been able as yet to obtain with certainty the author's name, or to ascertain the medium through which he has made his observations public. The field of research here opened is vast. It is something indeed to have entered it and to note its fertility for us. But our progress in it needs to be step surely following on step. The crop of knowledge must be gathered as we advance, and garnered as it is gathered. The success of research into the remoter fields will be largely dependent upon the successful prosecution of our researches in the less remote. It must be our business laboriously to search for and husband connexions and consequences; not to skim over the surface to some imagined goal. The sun-spot period comes and goes, but typhus has vanished as a pestilence from Ireland, and from this country, with the improved social state of the poorer classes. The sun-spot period may come and go, but it will be powerless to influence the prevalence of cholera or of typhoid when the local conditions for their propagation fail. Such occultness as may still attach to the phenomena of epidemicity differs in no wise from that which is common to all science, "the pursuit of which," as the Prime Minister has said, "leads only to the insoluble."

And here let me note how while epidemiology is patiently labouring and waiting upon the researches of the astronomer and the meteorologist, the materials necessary for its widest investigation are steadily accumulating under the master hand of one of the Society's Vice-Presidents, Dr. William Farr. The reports of the Registrar-General form the quarry from which the data for their labours will have to be hewn and drawn. But for the work of Dr. William Farr, begun in 1837 and continued to the present day, epidemiology in the complete sense of the word, as we interpret it, would be impossible in this country.

It will have been observed that I have made no mention, except incidentally, of the progress of our knowledge within the period under consideration, in the intimate and ultimate pathology of the epidemic diseases. I have done this advisedly, believing that at present this subject could not be profitably dealt with within the limits I have at my disposal, and believing also that the incidental reference I have made to it will illustrate with sufficient clearness the important part it is playing in the furtherance of epidemiological research. This reference shows, what most concerns my object to indicate, that the questions of caution which come within the range of epidemiology are now being largely brought within the reach of laboratory experiment and test.

And now, gentlemen, I have done. If my observations have not entirely missed their mark, they will have conveyed to you the notion I am most wishful that they should do, namely, that epidemiology has advanced just in proportion as a sound method of investigation has been brought to bear upon it. This is, no doubt, a truism; but it is one of those truisms which it is, perhaps, desirable to repeat from time to time. I have told a story of progress, but I have said nothing of the friction with which that progress was accomplished. I have endeavoured to set forth what we have learned; but I have said little of what we have had to unlearn. Now medicine the science cannot be dissociated from medicine the art. We have to reconcile (which professors of the pure sciences hold to be impracticable) the pursuit of science with the practice of art. The principal defficiencies which have hitherto impeded, and which still hinder, the progress of epidemiology, arise from the difficulty of this reconciliation. The story I have told proves, I think, that such reconciliation is not wholly impracticable and that it should be possible to bring the two sides of medicine for scientific purposes within narrower limits of divergence than at present exist, or to eliminate the disturbing influence of the one side upon the other, or both. This touches questions as yet unrecognised in medical education, either in the schools and hospitals, or in the examination-room, but which clearly concern the advance of scientific epidemiology. This Society, now disembarrassed of those collateral functions which were a necessity of its earlier existence, may well devote itself to these questions, and to the promotion of scientific epidemiology simply as such; and, I submit, that in so doing may look to a future not less honourable and not less useful than its past.

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